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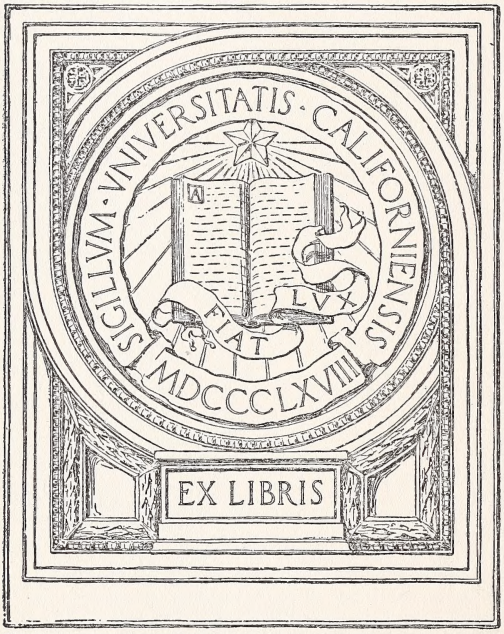

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TRANSACTIONS

OF THE

CALIFORNIA

State Dental Association,

AT THE

FIRST, SECOND, THIRD AND FOURTH

ANNUAL SESSIONS,

HELD AT SAN FRANCISCO, IN 1870, 1871, 1872, 1873.

SACRAMENTO:
RECORD BOOK AND JOB PRINTING HOUSE.
1873.

Presented to C. L. Goddard
by Dr. S. E. Knowles.
San Francisco. Cal.
March 20, 1882.

TRANSACTIONS

OF THE

CALIFORNIA STATE DENTAL ASSOCIATION,

AT THE

FIRST, SECOND, THIRD AND FOURTH

ANNUAL SESSIONS,

HELD AT SAN FRANCISCO, IN 1870, 1871, 1872, 1873.

SACRAMENTO:
RECORD BOOK AND JOB PRINTING HOUSE.
1873.

TRANSACTIONS

OF THE

California State Dental Association,

AT THE

FIRST ANNUAL SESSION,

HELD AT SAN FRANCISCO,

COMMENCING JUNE 29, 1870.

DISCLAIMER.

The California State Dental Association, although formally accepting and publishing the reports of the various standing committees, and the essays read before the Association, holds itself wholly irresponsible for the opinions, theories or criticisms therein contained, except when otherwise decided by special resolution.

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OFFICERS, 1870-71.

President,
C. C. KNOWLES, San Francisco.

First Vice President,
S. W. DENNIS, San Francisco.

Second Vice President,
J. J. MENEFEE, San Jose.

Third Vice President,
H. H. PIERSON, Sacramento.

Corresponding Secretary,
W. J. YOUNGER, San Francisco.

Recording Secretary,
H. J. PLOMTEAUX, Woodland.

Assistant Recording Secretary,
J. N. MYERS, Stockton.

Treasurer,
F. A. PARK, San Francisco.

Librarian,
J. BALL, San Francisco.

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TRANSACTIONS

OF THE

California State Dental Association.

FIRST ANNUAL SESSION.

Pursuant to a call issued by the San Francisco Dental Association, the Dentists of the State met in Convention, at San Francisco, in St. Andrew's Hall, Y. M. C. A. Building, June 29, 1870, and were called to order at 10 o'clock A. M.

Dr. Knowles was called to the chair, and Drs. Younger and Myers elected Secretaries.

Dr. Knowles stated the objects of the call, and addressed the Convention as follows:

GENTLEMEN: In accordance with a call issued by the order of the "San Francisco Dental Association," we have met to form a State Dental Association.

We believe the time has come when associated effort may be of practical advantage to ourselves and to the communities in which we reside. But we are about to try *no new experiment*, as the value of like associations has long since been demonstrated by others, whose footsteps we only follow, and by whose experience we hope to profit.

"Our Golden State," though lacking none of the elements of general enterprise, having already made its mark on the pages of the world's history, is among the last to acknowledge the practicability and propriety of what we are about to do.

It takes a long time to assimilate the heterogeneous elements of any new community, especially such as ours, drawn, as it is, from every "nation, tongue and people" under heaven, into that homogeneity which gives birth and substance to intelligent and productive association; and not till we outgrow the baser promptings of that blind selfishness which sees only the *present*, "which takes but never gives," and recognize a more generous policy, shall we be prepared to reap the full benefits of binding ourselves together for either social, intellectual or professional improvement.

Removed as we are by location, and until recently by communication, from the older centers of civilization, many of us for years have been left to our own individual resources, and probably have not kept pace with the growth of our profession in more favored communities.

It would be well, perhaps, for a moment, to compare the proud eminence which the profession now occupies, with that of, say thirty years ago. Instead of being as then, a *mere trade*, a sort of hybrid "between a veterinary surgeon and a tinker," with a *little more of the tinker*, at best but a mixture of empiricism, and what would now be justly considered quackery or downright knavery, the profession has now its *systems* of study and instruction, its colleges and professorships, filled by men of social, literary and scientific standing, equal to any profession known among men.

The history of the growth and usefulness of our profession for the last thirty years is acknowledged to be without parallel. A European journal, speaking of this, says: "The growth of this profession in usefulness, in both scientific and operative excellence, especially in the United States, is *wonderful*."

What has caused this change? What has liberalized the profession and made common property what but a few years ago were held as "*secrets*," to be had only for so much money? I have bought and paid for, as "*great secrets*," various receipts for metal dies, solders, methods to prevent the warping of plates, receipts for the manufacture of teeth, tooth powders and washes, methods of preparing foil, and methods of using it; in fact almost every item of practical knowledge, upon which I did not happen to *blunder* during the first decade of my practice, was bought, and eagerly bought and gladly paid for. I once paid thirty dollars for the receipt of the "arsenious acid and morphine paste," and twenty dollars for the important knowledge that "lapis infernalis," or "hell stone," was sure to render gentle the most high strung of sensitive dentine, and so on to the end of the chapter.

The first full set of teeth *I ever saw*, I made, and the means by which the result was reached were, I assure you, of my own invention. At that time I had never seen an impression cup (the impression being taken in wax held in the fingers, or the plate fitted to the mouth by bending with hammer and pliers), but I saw the necessity of some such contrivance, and constructed one of brass and tin plate, which would astonish the present generation of dentists. It was made to take the impression of both jaws at the same time, filled on both sides with yellow wax and the jaws closed into it. I need not say that this first attempt was not a perfect fit, although double geared with formidable spiral springs. The victim is now dead.

Gum teeth were unknown, and when S. W. Stockton first introduced them they were considered the wonder of the times, although, compared with the more perfect productions of to-day, they looked like "split beans set up in gingerbread." But all honor to Stockton; he contributed largely to advance this branch of our profession.

Nitric acid, sulphate of copper, creasote and the hot iron were the approved means of killing the nerves of aching

teeth—and sometimes nearly killed the patient. Extracting was usually done with the "key." Flagg's forceps were just coming into use, and Parmley's soon followed.

I well remember my first *horror*—the first blood shed by my hand on the threshold of our profession. 'Tis more than thirty years ago, and no circumstance of yesterday is more fresh in my memory than that first ordeal of extracting a tooth.

[Dr. Knowles here gave a humorous description of the attempt and failure, and proceeded :]

With another and very determined wrench, with such force as I then thought was sufficient to break every bone in the man's body, I tried to twist the tooth out, when—*crash*—the hook again slipped off, and as ill luck would have it, my foot tripped at the instant, and the instrument, hook, handkerchief and all were forced into the man's pharynx, so completely strangling him that for a few moments visions of homicide, manslaughter or murder floated before my bewildered imagination, and nearly deprived me of volition. Of course I pulled the thing out of his mouth, when, "Wh-what in thunder are yer about? guess yer don't know much 'bout hauling teeth," roused me. I had not killed him. After considerable coaxing I got the instrument on again, and determined, as confidence returned, to have the tooth out. *I got it*, but the expression of that man's face—his protruding eyeballs, suffused with tears, and the cry of agony he uttered at that last and final wrench, have haunted me these long years. I did not charge him anything.

But, gentlemen, I received as good instruction as most students of those days, with perhaps additional advantage of two years previous reading of general medicine. Six or eight months in the laboratory and at the chair—reading the scanty text-books then known, and paying for this instruction from one to five hundred dollars, swearing secrecy to the receipts and processes, and agreeing not to practice within certain limits, was all that was required.

A cheap way to become a doctor.

How different to-day is all this! The accumulated knowledge of the most advanced among us is spread before the student and urged upon him. Instead of withholding knowledge, we demand such conditions as to age, capacity and thorough study of both theory and practice, as shall better fit him for his prospective duties than we ourselves were.

Till 1844, I was not aware of any other dental periodical than "Stockton Dental Intelligence" being published. About the same time the "American Journal of Dental Science" came to my hands, and from that time the press has poured forth its treasures, and met the demands of our growing profession. Text-books, since "Bell on the Teeth" and "Fitch's Dental Surgery," and one or two smaller works, constituted my entire library, have multiplied, till to be ignorant of the leading scientific facts of the profession, by even the most rural among us, is simply to be stupid.

The difference between the *now* and *then* is solely due to association. That friction, which interchange of thought and experience is sure to excite, has built up and made the profession what it is to-day, our pride and boast. The profession on this coast, although ranking among its members many well educated and most excellent operators, needs this friction of association to develop and make more effective its powers and usefulness.

We need to sink every personal consideration and ambition which may stand in the way of the freest platform and the most democratic basis of organization. Let all come!

Let the old and experienced in the profession remember that they have been young and perhaps not overwise—and the young remember that to be wise they must have experience.

We have much to do to get in the way of work, and it will need "prudence, zeal and integrity," to make this proposed Association what it should be, a *bond* that shall unite the profession in friendship—a spur to the indolent, a beacon

star to the studious, a crown to the good and true, but a whip of scorpions to the undeserving.

But, gentlemen, not alone in the scientific departments of the profession will association benefit us; we have social natures to cultivate. The old saying that "two of a trade can never agree," is too often a truth among us. Many a man seen through the fogs and mists of professional jealousy would upon nearer approach prove to be a "friend and brother."

We suffer professionally by neglecting to cultivate that sociality which constitutes the true basis of society. To become better acquainted with each other, is generally to better respect each other. How many of the asperities of professional life might be softened down or altogether erased by a more genial tempered intercourse with each other. Instead of the feeling, when we enter the office or presence of a brother professional, that we are to encounter, perhaps, the uncertain perils of treading on forbidden ground, or the terrors of entering the den of some gorgon or other monster —a brother's welcome greets us, or at least a professional and gentlemanly courtesy sets us at rest. I believe man to be better than he is accredited to be. No man lives who is not attuned to a chord, to the *key-note* of which grand harmonies may be called out; we have only to find it and use it, to make better any with whom we may come in contact. This is the true secret of life's concords as well as discords. Touch these chords rudely and with unskilled hands, and harsh jarrings grate along the whole gamut—but sweep them in their true harmonic relations, and humanity responds in one grand orchestral anthem.

You, gentlemen, prove by your presence that you are interested in the business before us. Others who are not here in person, still in spirit wish us God-speed. Others, perhaps, whose attainments so far transcend the ordinary pretensions of the profession, that they have no need of "more light," stand proudly alone, and view with contempt any acknowledgment by their humble brethren that there is

more to learn. Happy men!—the world was made for them.

Progress, gentlemen, is the living password by which to gain admission to higher degrees of professional excellence. He who does not constantly and persistently strive to do better to-day than he did yesterday will surely retrograde. There is no standing still; go forward or backward, live or die, is still the law, and there is no evading it.

Has the profession exhausted all inquiry into the causes, remote and proximate, of the diseases we are called on to treat? Has the last response been given from the temple of Hygeia? Has conservative surgery accomplished its last and highest triumph? Has the microscope, the scalpel and the crucible no more to reveal? Is *art* exhausted and all the field of inquiry reaped and their fruits garnered? Then may we sleep!

Gentlemen, we need a college on this coast, and if we have not the necessary talent, among ourselves, we can *import it*. We owe to those who are to take our places, greater facilities for study and professional breadth than the times have afforded us. The future will demand men educated in all that constitutes the scholar and professional man, and refined in all that makes the gentleman.

The tendency of the profession is towards specialties; ours has become distinct, and we must see that its excellencies are the full measure of its importance. Charlatanism and quackery will not much longer be tolerated. The general intelligence of the people is rapidly increasing, and the general principles of most of the professions are to-day better understood by the people than they were by their professors an hundred years ago, and to maintain our pre-eminence, we must "push ahead."

We need a periodical publication, partly as a means of communication among ourselves and the professional world, but mostly as a vehicle of special information and instruction to the people. Never will our profession hold its true place in public estimation, till the people are educated to know their own needs and justly appreciate an intelligent and

skillful supply of them. We well know from daily observation in our offices, that general ignorance abounds as to the benefits and demands of our profession, even among those whose general intelligence is unquestionable. A popular journal issued, say monthly or quarterly, filled with such matters as this state of things demands, would be of incalculable advantage to the people and to the profession. A microscopical corps, devoted especially to dental and cognate inquiry, would be of use to us. A society of the kind already exists in this city, to which the profession could doubtless gain access.

We should also establish a library and cabinet, as educational adjuncts, and to accumulate and preserve for future use such specimens and varieties as are occasionally met with, and which would otherwise be lost.

Professional fees will probably also demand a share of your attention, and should be approached with caution. "Who steals my purse, steals trash," may do for an impecunious philosopher, but with most men it is rather, "stand and deliver." While I believe our profession is entitled to liberal support, and that the best talent generally commands and receives the largest fees, yet we should not forget that there may be those, whose full souls overflowing with the "milk of human kindness"—whose sole satisfaction in this "vale of tears" is to do good, without thought of self—who, even through the public prints, inform the suffering world of their disinterestedness and desire of self-sacrifice for the benefit of others—who toil early and late, bringing to the altar of their devotion the most transcendent talents, varied and extended experience, and most profound professional attainments and skill—and who, contrary to the usual maxims of the world, "give, but will not barter their souls." I say such men have lived and may even be among us unrecognized and unappreciated. But I am not one of them.

Many other matters will probably come up during the sittings of this Convention, and perhaps none more important than an inquiry into the propriety of obtaining State legisla-

tion regulating the practice of dentistry. I am aware that great diversity of opinion exists on this subject, and it would be well to determine the matters.

There are fields of professional inquiry not yet entered upon, which will yield rich returns to the faithful student, and if those to whom special subjects of inquiry are to be committed, apply themselves diligently, our next yearly meeting may indeed be profitable.

Thus, gentlemen, have I hinted at the work before us. Our future usefulness as an association will greatly depend on the manner in which we commence. Let no subordinate questions sway us from the stern duties we owe to ourselves and the age in which we live.

Dr. Ball moved the following preamble and resolution:

WHEREAS, It is the opinion of the members of this Convention that it will promote the general good of the profession in this State to have a State Dental Association; therefore,

Resolved, That we now proceed to the formation of such an organization, and that there be a committee of five chosen to report a suitable constitution and by-laws for the government thereof.

Adopted.

Drs. Ball, Dennis, Menefee, Kingsbury and Jenner were appointed said committee, who retired to confer. Convention took a recess.

After call to order, the Chairman of the committee reported a constitution—which declares among the objects of this association, "To cultivate the science and art of dentistry and cognate sciences," "To elevate and sustain the character of the profession," "To promote mutual improvement, both professional and social."

The officers are a President, three Vice Presidents, a Secretary and Assistant Secretary, Corresponding Secretary, Treasurer and Librarian.

Three classes of memberships are provided for—acting, corresponding and honorary. Acting members must be graduates of some dental college, or have been in practice five years.

The constitution was adopted and signed by the following named gentlemen:

Ball, Dr. J. ..... San Francisco.
Bunnell, Dr. F. E. ..... "
Cutlar, Dr. R. ..... "
Cool, Dr. G. W. ..... "
Dennis, Dr. S. W. ..... "
Dutch, Dr. William ..... "
Eaton, Dr. E. A. ..... Vallejo.
Flewelling, Dr. J. B. ..... Petaluma.
Jenner, Dr. E. K. ..... Healdsburg.
Knowles, Dr. C. C. ..... San Francisco.
Knox, Dr. H. E. ..... "
Kingsbury, Dr. Wm. B. ..... Santa Clara.
Libby, Dr. M. Lawrence ..... San Francisco.
Light, Dr. W. W. ..... Sacramento.
Myers, Dr. J. N. ..... Stockton.
Menefee, Dr. J. J. ..... San Jose.
Prather, Dr. W. J. ..... Woodland.
Plomteaux, Dr. H. J. ..... "
Pierson, Dr. H. H. ..... Sacramento.
Sichel, Dr. Max ..... San Francisco.
Spencer, Dr. W. E. ..... Placerville.
Wilbirt, Dr. J. L. ..... Petaluma.
Younger, Dr. W. J. ..... San Francisco.

Election of officers ordered for ensuing year, which resulted as follows:

Dr. C. C. Knowles, of San Francisco ..... President.
Dr. J. J. Menefee, of San Jose ..... Vice President.
Dr. S. W. Dennis, of San Francisco ..... " "
Dr. H. H. Pierson, of Sacramento ..... " "

Dr. W. J. Younger, of San Francisco..Corresponding Sec'y.
Dr. H. J. Plomteaux, of Woodland....Recording Secretary.
Dr. J. N. Myers, of Stockton..Assistant Recording Secretary.
Dr. F. A. Park, of San Francisco.....Treasurer.
Dr. J. Ball, of San Francisco.....Librarian.

The organization of the Association was then declared complete, and on motion adjourned to 7½ o'clock P. M.

FIRST DAY—EVENING SESSION.

Met as per adjournment.

Committee reported by-laws, which after consideration were adopted; also reported the following as proper subjects for consideration by the Association during its sittings:

I.—Operative Dentistry.

1. Extraction of teeth.
2. Plugging teeth—methods and material.
3. Devitalizing nerves in teeth—when indicated, and modes of practice.
4. Alveolar abscess, and treatment.

II.—Mechanical Dentistry.

1. Bases for, and methods of mounting artificial dentures.
2. Special consideration of vulcanite—its uses and abuses.

III.—Anæsthesis.

IV.—Professional Fees.

Adopted.

Dr. Ball moved to amend Art. I., Sec. 7, of the By-laws, by adding: "No member of this Association shall take a student in dentistry for a less term than two years." Laid over till next meeting, under rule.

Drs. S. H. Roberts, J. L. Cogswell, H. Austin, J. J. Birge, J. P. Crowell, Louis Bush, A. R. Walker and J. A. W. Lundborg, of San Francisco, were admitted to membership.

The subject of devitalizing pulfs, and subsequent treatment, was then considered.

Dr. Younger, being called on, gave a lengthy and very clear description of his mode of practice. Uses paste of cobalt, arsenic and sulp. morphine, to devitalize; removes in twenty-four hours; treats with chloride zinc, tinct. iodine, iodine and creosote; fills point of fang with cotton steeped in creosote, rest of fang with Hill's stopping or gold; fills crown and pulp cavity with gold.

Dr. Menefee uses dry arsenious acid, and morphia; caps with lead, seals with cotton and sandarac, and removes nerve next day, treats with fluid ext. ergot, and fills with gold.

Dr. Park uses spray when possible, and removes nerve at once and fills; in other cases, applies the arsenious paste as usual, and treats with creosote for a number of days, or till the nerve is so tanned as to allow its removal whole, its legs hanging, and without difficulty.

Dr. Roberts applies tinct. aconite, erethium and chloroform, equal parts, for ten minutes; removes nerve without pain.

Drs. Sichel and Prather use rhigoline spray with success, in nearly all cases.

Dr. Ball uses solution of gutta percha on cotton to seal apex of fang; fills with gold.

Dr. Knowles uses spray when practicable; thinks a surgical operation better than chemical action; treats with iodine and aconite; does not fill fang point with cotton or swab with creosote; nature protests against its use elsewhere, why not in the teeth? Uses creosote only where nerve has been destroyed by chemical action; fills entirely with gold.

Others participated in the discussion, which was very interesting and instructive.

Dr. Knox gave notice that, by request, he would illustrate the use of the rubber dam, which was made the special order for to-morrow (Friday) at 2 o'clock.

Subject selected for consideration for morning session: "Vulcanite and other bases for artificial dentures."

SECOND DAY—MORNING SESSION.

Called to order at 10 o'clock A. M. President Knowles in the chair.

Minutes read and approved.

Dr. Charles K. Jenner, of Healdsburg, was admitted to membership.

Dr. Menefee offered the following preamble and resolution:

WHEREAS, It has been the custom of persons having patents for alleged improvements in mechanical dentistry, to bring them before the Eastern Dental Associations, for the purpose of advertising the same; therefore, be it

Resolved, That it is the opinion of this Association, that no such subject should form any part of the notice or discussion of this Association.

Adopted.

There appearing more pressing business before the Asso-ation, the consideration of vulcanite and other bases was postponed till afternoon session.

Dr. Menefee was called to the chair, and Dr. Knowles offered the following resolutions:

1. *Resolved*, That a Dental College on this coast is essential to the interests of the profession.

Referred to Drs. Knowles, Dutch and Menefee.

2. *Resolved*, That it is expedient that a periodical be published under the direction of this Association.

Laid on the table.

3. *Resolved*, That, to elevate the profession and to protect the community against charlatanism, State legislation is necessary.

Adopted.

Adjourned to 1 o'clock P. M.

SECOND DAY—AFTERNOON SESSION.

Called to order at 1 o'clock P. M. President Knowles in the chair.

Minutes of the morning session read and approved.

The President announced the following standing committees, as provided by the by-laws:

On Arrangements—Drs. Park, Myers, Flewelling, Wilbirt, Kingsbury.

On Publication—Drs. Knowles, Plomteaux (*ex officio*), Younger, Austin, Eaton.

On Scientific Investigation—First Section—Drs. Knox, Sichel, Crowell. Second Section—Drs. Paine, Dutch, Roberts.

On Dental Pathology and Surgery—Drs. Menefee, Bunnell, Lundborg, Light, Spencer.

On Mechanical Dentistry—Drs. Cool, Birge, Prather, Cogswell, Jenner.

A communication from Dr. E. K. Jenner in reference to his patent combination of gold and rubber, in which he offers to the Association its free use for one year, under certain named restrictions, was received and referred to the Committee on Mechanical Dentistry to examine, and report on merits, etc.

The resolution relating to a periodical was taken up and referred to Committee on Publications.

Dr. Park offered the following:

WHEREAS, The National Association of Dentists holds its annual meeting in Nashville, Tennessee, August 2d, proximo;

Resolved, That it is expedient that this Association be represented in said body.

Subject of "Bases for Artificial Teeth" taken up.

Dr. Knowles gave history and composition of vulcanite; chemical changes liable to occur under certain circumstances.

Believes vulcanite, as a cheap base, superior to any mixture of the base metals, when properly treated. Thinks decomposition complained of to result more directly from imperfect vulcanizing. Uses graduated lamp, and secures uniform results of temperature and time. Time, 2 hours 40 minutes; temperature, 330 degrees. Prefers gold to all other bases. Made the first vulcanite used by himself.

Dr. Younger condemns "rubber;" believes it injurious in a large majority of cases; has used the English rubber in his practice; has seen the evil effects spoken of in cases of all kinds of rubber; believes it owing to poisonous effects of the mercury in the material.

Dr. Paine had known cases of diseased mouths cured by substituting vulcanite for gold.

Dr. Ball has met with as many cases of diseased mouths where gold was worn as where vulcanite was used.

Dr. Paine further remarked that he had known cases of disease, similar to those referred to by Dr. Younger and others, where no artificial dentures had been worn.

Drs. Menefee, Dennis and Prather did not condemn vulcanite; believed the profession could not do without it, under the present order of things. Dr. Prather had seen the ill effects of too deep air chambers; used large shallow chambers.

Drs. Bunnell, Park and Plomteaux placed themselves on record as in favor of vulcanite.

Drs. Crowell, Jenner and Park believed that the trouble complained of arose in a large majority of cases from uncleanliness. Referred to specific cases, and in which the piece had not been removed for seven years; made in England.

The discussion was animated, exhaustive and very interesting, occupying fully two hours.

SECOND DAY—EVENING SESSION.

Called to order at 7:30 o'clock P. M. President Knowles in the chair.

Minutes read and approved.

Committee on Publication reported on subject of periodical:

Resolved, That we recommend that a periodical be published quarterly, under the supervision of the Committee on Publication, and distributed *pro rata* according to the amount subscribed by each member of the Association.

Signed by Committee.

The periodical referred to is designed for a popular vehicle to convey proper information to parents, guardians and the people generally, on matters of special interest to them in the care and treatment of their teeth, etc.

The matter was recommitted for report at next annual meeting.

Dr. J. Ball offered the following preamble and resolution:

WHEREAS, Certain persons, calling themselves dentists, are filling all decayed teeth with an amalgam of base metals, combined with mercury, to the great injury of the profession and of their patients; and,

WHEREAS, The great improvement in the use of gold as a filling enables all good dentists to preserve every tooth not already lifeless; therefore,

Resolved, That we do most earnestly protest against the use of any amalgam in any tooth that gives evidence of permanent usefulness, when properly filled with gold.

Indefinitely postponed.

Dr. Park offered amendment to by-laws, creating Auditing Committee. Laid over under the rules till next meeting.

The special committee on matter of Dental College reported,

and recommended the subject be referred to Committee on Dental Literature and Education.

So referred, to report at next annual meeting.

Dr. Dennis read an essay on "The Moral of Thoroughness in Dentistry." (See Mo. Dental Journal, page 361, vol. 2.)

Under suspension of rules the Society proceeded to elect delegates to the National Association. Drs. Dennis, Paine, Younger, Light and Pierson were selected and declared elected.

Dr. Park offered the following:

Resolved, That our delegates to the National Convention of Dentists be and are hereby instructed to use their influence to have the next session of said body in San Francisco.

Adopted.

The subject of "Alveolar Abscess, Cause and Treatment," was taken up and discussed by Drs. Dennis, Austin, Dutch, Knowles and others.

Nothing particularly new was elicited, although the subject was ably treated. Dr. Dutch insisted on the "heroic treatment" of abscess by the scalpel, and referred to a case in his own mouth, which had resisted all other treatment.

Adjourned to July 1st, at 1:30 P. M.

THIRD DAY—AFTERNOON SESSION.

Called to order at 1:30 o'clock P. M. President Knowles in the chair.

Minutes read and approved.

J. P. Gillespie and J. B. M. Smith, of San Francisco, were admitted to membership.

Resolved, That the next communication of this body be held in Sacramento.

Lost.

Resolved, That it be held in San Francisco.

Adopted.

Dr. Smith introduced a specimen of "McClelland's Rose Pearl," and spoke in its favor.

Subject referred to Committee on Mechanical Dentistry.

The hour of special order having arrived, Dr. Knox illustrated his method of using the "Rubber Dam," by applying it to the teeth of a member.

A vote of thanks was tendered to Dr. Knox.

Dr. Cool presented specimen of "Cool's Metal," which he claims as his own invention, consisting of pure tin four parts, and cadmium one part; recommended it for partial inferior plates—was too heavy for other work. Referred to Committee on Mechanical Dentistry, to report at next annual meeting.

Dr. Gillespie introduced "Green's Pneumatic Engine," and spoke favorably of its use.

The President announced the following subjects as Theses to be read at the next annual meeting:

On the causes of degeneracy of the teeth, especially among children. Assigned to Dr. Cutler.

On the causes of irregularity of the teeth and best method of correcting the same. Assigned to Dr. Younger.

On the pathology and treatment of alveolar abscess. Assigned to Dr. Austin.

On Dentistry—its history, present status, claims and relations. Assigned to Dr. Gillespie.

On Exostosis—history, causes, effects and treatment. Assigned to Dr. Prather.

On professional fees. Assigned to Dr. Ball.

Dr. Bunnell read an essay on the "History and Progress of the Art of Dentistry."

The Committee on Mechanical Dentistry reported on the specimen and method of mounting teeth on gold and vulcanite, presented by Dr. Jenner, and say "they regard it as an

improvement, being stronger, cleaner and much neater than the ordinary gold plate work." Report filed.

"Plugging Teeth" was chosen for consideration at the evening session.

Adjourned to 7½ o'clock P. M.

[And on invitation visited the new rooms of Dr. Dutch, where "iced-champagne and sociability" flowed freely.—*Reporter.*]

THIRD DAY—EVENING SESSION.

Called to order at 7:30. President Knowles in the chair.

Minutes read and approved.

Committee on Mechanical Dentistry reported on Dr. Cool's method of lining vulcanite plates with gold or aluminum, as being worth the attention of the profession.

By permission, Dr. Ball's "amalgam resolution" was read and motion made for its adoption.

The Chair declared the motion out of order, as the resolution had been indefinitely postponed.

Appeal taken, and the Chair sustained.

The resolution was then taken up on vote of reconsideration.

Motion to lay it on the table. Lost.

Motion to amend. Lost.

Motion to adopt. Lost.

Cushing's Manual was adopted as our rules of order.

The members were invited to send any specimen of interest to the profession to the Librarian, as a commencement of a Dental Museum.

By resolution the Publishing Committee were instructed to furnish an abstract of the proceedings of this Association to the "Dental Cosmos" and "Missouri Dental Journal," and request a copy for each member.

Resolved, That compensation be allowed Dr. Plomteaux for services as Recording Secretary.

Dr. Plomteaux refused to accept, and a vote of thanks was unanimously tendered him.

Hour of special order having arrived, Dr. Knowles was requested to open the subject.

Dr. Dennis called to the chair.

Dr. Knowles—Did not know exactly what the Association desired, whether he was expected to present the subject in its general or special aspects, or both.

Voice—Give us your own method.

Dr. Knowles—Well, perhaps I know more of that than the methods of others. Plugging teeth is by young practitioners thought to be a very simple matter, only "stopping a hole;" but "there's the rub"—how to do the thing. After more than thirty years' constant practice, trying every day to do better than was done yesterday, it is still a problem. Take, for instance, a posterior proximal cavity in second inferior molar—first "gets at it" by either wedging, cutting with chisels or file, so as to get a clear view with a glass. Opens freely from the top so as to make the cavity compound; uses chisels and gouges of his own make for this purpose. Cuts walls perpendicular from top to bottom with very slight dovetailing; sees that the cervical margin of cavity is formed so as to leave no angles or pits with walls; works on the "parabolic plan"—in no case leaves abrupt angles, or forms "retaining pits." Fills with cylinders or blocks formed by folding soft foil into strips of the width necessary for length of blocks, folds on flat broach, allows first block to be wide enough to completely cover one wall, from above top to bottom of cavity, and turn a little on cervical wall, pushes home firmly with "bladed pluggers;" treats opposite wall same way; now introduces block sufficiently large to completely cover cervical wall, and "puts

it home" with mallet or strong hand pressure. Follows nearly the same process till a mere slot is left, which fills with adhesive foil; file and finish. Treats all proximal cavities in molars and bicuspids as compound; never undercuts grinding surface, but plugs square down towards neck of tooth. Always uses blades serrated at points; in all cases uses adhesive foil in "cones" or "strips" from the heater; chooses the finest serrations for adhesive foil. Has used "heavy foils;" used pure gold rolled thin more than ten years ago for large cavities in molars. Has had experience in sponge gold, but likes foil better for all cases of contour plugging. Uses cylinders in proximal cavities in front teeth; fills cervical portion first with cylinders large enough to completely cover wall, and uses "flat blocks" to cover lingual wall to apex, which fills with another cylinder, and finishes plugging with strips of adhesive foil, malleted firmly into place. Studies the "divine fitness of things" before beginning to plug, then acts accordingly.

[Many questions were asked and answered during the time of Dr. Knowles' remarks.—*Reporter.*]

Dr. Crossett, a visitor, by invitation addressed the Association, and on motion was declared an honorary member.

A vote of thanks was tendered the President for the impartial manner in which he had conducted the business of the Association.

Minutes read and approved.

Receipts of the session, $185; disbursements, $46 50.

On motion, adjourned to first Tuesday in June, 1871, San Francisco, California.

H. J. Plomteaux,
Recording Secretary.

TRANSACTIONS

OF THE

California State Dental Association,

AT THE

SECOND ANNUAL SESSION,

HELD AT SAN FRANCISCO,

COMMENCING JUNE 6, 1871.

DISCLAIMER.

The California State Dental Association, although formally accepting and publishing the reports of the various standing committees, and the essays read before the Association, holds itself wholly irresponsible for the opinions, theories or criticisms therein contained, except when otherwise decided by special resolution.

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TRANSACTIONS

OF THE

California State Dental Association.

SECOND ANNUAL SESSION.

The second annual meeting of the California State Dental Association was held at the rooms of the San Francisco Dental Association, San Francisco, June 6, 7 and 8, 1871.

The Association was called to order at 10:30 A. M., by the President, Dr. C. C. Knowles.

Roll of officers called; all present except Vice President H. H. Pierson, and Treasurer F. A. Park, deceased.

President Knowles delivered his annual address, which was received with applause, and that portion of it relative to the education and elevation of the profession, was referred to the Committee on Dental Literature and Education, and the address in full to the Publication Committee.

GENTLEMEN: With pleasure I welcome you to the second annual communication of the "California State Dental Association."

It is desirable that the time spent here should be so occupied that each member of the Association, as well as the

profession at large, and the community we serve, may be benefited, and this end can be served only by order, harmony and strict attention to the business of the sessions.

We come together as learners, searchers after knowledge, and this spirit alone should characterize our deliberations. Let each man feel that he has *something* to contribute that may be of use to others; freely give it, and as generously receive from the common stock.

Science knows no royalty save that homage which spontaneously outsprings from liberal souls when genius ministers at her altars.

Small as may be our beginnings, they are full of hope. All great enterprises have their origin, like the sources of our rivers, in the smallest springs. Perhaps away up in the barren strongholds, amid the crags and bleak snow-crowned tops of the earth's waste places, or from the darkness and silence of its lower depths—here and there welling out in small and insignificant rills—scattered, powerless, turned aside by a blade of grass, or obstructed by a pebble—these small beginnings are born. With feeble though persevering movement they press onward, augmenting force at each accession of union, till the resistless tide rolls broad and deep, making glad the valleys with smiles of broad fields, and flowers, and fruits, and pleasant homes. So our small beginnings may, by association and aggregation, swell the tide of our power and usefulness as a profession. Here let us "gather up the fragments that nothing be lost," and let us not "despise the day of small things."

But while we come together and congratulate each other in the fullness of life and health, let us not forget those who have passed from us through the portals that lead to the unknown. Drs. F. A. Park, the honored Treasurer of this Association, and H. J. Paine, Chairman of the Second Section of the Committee on Scientific Investigation, are dead. These gentlemen were too well known to you to make it necessary for me to enter into any extended panegyric. I will simply say, that in each of them I have lost a personal

friend, and this Association and the profession have lost two faithful and useful members. May we long cherish for them a grateful remembrance.

Gentlemen, it is usual on occasions like the present to bring forward some *ponderous* matters, erudite, and pregnant with thought, brought forth with the labor which a year's time to prepare would seem to allow and make necessary. But I have to confess that *procrastination* has stolen too much time to allow me more than to regret that this anniversary finds me so illy prepared to fill the usual expectations of the occasion; but I hope you may, in part, at least, be compensated by the papers from gentlemen to whom were assigned subjects of interest at our last meeting.

Gentlemen, in the absence of any preparation for this occasion, I will present a paper which was read before the San Francisco Dental Association, entitled "Nothings."

Gentlemen, I am not prepared to offer you a very scientific or perhaps instructive disquisition this evening, but will just glance at some very common matters, that may be not altogether without interest.

We are, perhaps, too apt to pass lightly over matters of every-day life and experience *because* they are commonplace and met with at every turn in our professional career. There is, however, sufficient variety in "life's dull routine," if sufficiently studied, to interest and perhaps instruct the close observer. When we reflect that the sum total of our professional life consists of those small and generally overlooked items, which of themselves are too frequently considered trivial only because they are familiar to us—that the proud eminence to which our profession, as compared with itself forty years ago, has attained—that the proficiency, talent and professional excellence claimed and possessed by the best among us has been attained only by, and is the result of, the aggregated items of every-day professional life, do we see the importance of attaching significance to "small things."

I will, then, for a short time deal in "small matters." I

may say nothing new, but only attempt to "stir up your pure minds by way of remembrance" of old, very old, and, perhaps, too frequently forgotten ideas. At first I will *growl* a little, and then turn to pleasanter thoughts.

At the outset it would be well to remember that we are human, *only human;* that the passions, prejudices, hopes, aspirations, fears, as well as general "cussedness" of humanity, attach to us as to all men; that we may be "tickled by a straw," or "stung to madness by a fly." The *little* things of life, the *trifles* which we may, perhaps, most despise, frequently most annoy us. A man may meet the greater vicissitudes of life—may dare the perils of arctic or antarctic latitudes—may defy the elements, chain the lightnings, and hold the winds in his hand, look "grim-visaged war" in the very eye with steadiness, and even "laugh death to scorn," but would find himself sorely tried with both hands engaged in holding on to a bucking mule and a Georgia gallinipper on his nose, boring for blood. All professions and occupations pursued by man doubtless have their perplexities and annoyances, and we are prone to consider those *greatest* with which we have most to do. I have often thought that if Satan, in the trials instituted against poor old Job, had induced him to become a dentist, and then put him at work on some patients that I have known, that illustrious instance of patience would not have reached us in all its beauty.

Growl 1st. A mother visits your office with her little pet, who, after various coaxings, and promises of whipping, and telling papa, being shut up in the closet, and called naughty, then a good, brave little boy, ending with a promise of candy or other titbit, finally affects an introduction to the Doctor, "who won't hurt him, who will only just look at the naughty tooth that aches him so," with a sly wink, "take it out, Doctor." You spend a good half hour, with patient waiting, to get him into the chair, only to find the young gentleman is not altogether without suspicion that you want to "fool" him (as he has had like experiences where pa-

rental threats and promises have been largely discounted), and is very sharp to see that you do not get too near him with "that ugly thing in your hand," and another ten or fifteen minutes are spent in vain endeavor to coax the young wideawake to just let you see what the matter is—when the dear cherub sets up a howl, and mamma says: "The little dear is *so* nervous, Doctor, I had better call to-morrow with him" (*just think of it*), and out they go without as much as thank you, or, if offering to pay you, do it in such a manner as to allow you as soon to steal the last cent from a blind beggar as to take a fee. *You have not done anything, you see.* (Keep cool, gentlemen.)

Growl 2d. A child is presented with very badly decayed frail teeth, to save which in an adult mouth would require all the skill and care you could possibly command under the most favorable circumstances. But now you must combat a host of demons in shape of tears, moans, small mouth, saliva, restlessness, the active sympathies of a sensitive mother, who insists in sticking so close to her child that you can gain no moral control of it, and the mother's attempt at control are worse than useless, and you work and sweat in physical weariness and mental torture, and complete the two hours' operation. The mother smiles, the child's tears are dried, you yourself begin to feel cheerful in hopes your operation has gained you at least a friend. The mother handles her purse with an air that seems to allow no doubt a good round fee, which you feel you deserve, is coming, with thanks added, asks: "What is your fee, Doctor?" You feel good—in fact, amiable, and name a moderate fee. Mother looks blank, astonished, and says: "Why, Doctor, I thought dentists operated for children at half price." *Keep cool, gentlemen.* Yes, gentlemen, that good mother expected, after more than twice the toil, time and vexation necessary to complete a similar operation in her own mouth, that her child was to be served at half price—on the principle that children are admitted to a monkey show.

Again: After having completed an operation in a mouth under such a train of circumstances as the foregoing, to the best of your ability, well knowing that the imperfect structure of the teeth, the presence of far less than the normal amount of osseous matter, and consequent abnormally enlarged tubuli and general frailty of the teeth, together with the constitution and habits of the child, forbids you to hope for more than temporary benefit to them, you state the case in all its bearings to the parents, notifying them to have the teeth looked after every year, at least. Well, you see nothing of the case for perhaps five or six years, when a young lady with her mother calls to see about a painful tooth; you have forgotten the case; examine, and find it too much diseased to make any attempt to save it practicable; you say so; you see others that are filled that show results to be expected in any case of the kind, and say to the mother: "There are other teeth filled that show signs indicating a need of early attention." With looks of indignation you are told that "you filled those teeth but a little while ago." You ask the name, and in vain look over your record for two, three, four, five years back, and at last find the name and circumstances entered perhaps six or seven years before. You show the record. The mother is astonished at the lapse of time, but blandly remarks: "I suppose, Doctor, you would not charge anything to refill them?" You reply, stating the circumstances under which they were filled, the caution then given, and modestly decline to refill them without charge. The mother is angry, and tells you the work was not half done, denies all the mitigating circumstances, and finally takes advice of Doctor B., over the way, who agrees with her that she has been badly abused; that *he* always keeps his work in repair; that Dr. A. may have a sort of reputation with some people, but *that* work shows for itself with what justice his claims can be sustained. And so you have in the end made an enemy where you should have made a friend; not altogether through the ignorance of that mother, but through the

selfishness or stupidity of a whelp who disgraces the profession. I use this strong language because it is *just*. No greater meanness can be manifested by man towards man, than to distort his best acts and intentions into crimes or follies to those who are simply ignorant of, or unable to judge correctly concerning the motives or circumstances attending such intentions and acts.

This and similar annoyances are among our daily experiences, and strong must be that soul who can stand calm and undisturbed in the presence of unmerited opprobrium and detraction, prompted by malice or small-souled jealousy. It takes a long and severe course of discipline to so train the resistant powers of a man that they can be held in check under such provocations—and happy is he who has conquered himself.

Growl 3d. Application is made to treat a case of exposed pulp; you make the necessary application, with injunctions to return at a specified time for further treatment. Time passes—two, three or four weeks; patient comes back with swelled face, threatening abscess, or perhaps abscess is already formed, and says: "Doctor, I thought you killed the nerve of my tooth?" You say: "By present appearances, I guess I succeeded." He says: "What in thunder makes the thing ache so, then?" You explain; he may or may not appreciate you; at all events, he is anxious to be rid of the present annoyance. The tooth is valuable, and by judicious treatment may become useful. You treat it till active trouble ceases, and explain to him the imperative necessity of allowing you to proceed to complete the cure. He goes away, is free from pain, and you see no more of him till the tooth has passed all amenity to treatment, or at least you feel it is useless to make any further attempt, and recommend extraction. He demurs, and says: "Why, Doctor, you told me you could save the tooth," and goes away thinking you a botch, without offering to pay for what you have already done, and would feel insulted if you demanded a fee. *He* applies to the fellow over the way, and is con

firmed in his opinion. Or, perhaps, you succeed in placing the tooth in proper condition for plugging; it needs a large contour plug; you carefully perform the operation, spending three or four hours' time, and when completed to your satisfaction you smile with inward gratification at your success, and with an air of triumph hand him the glass, expecting him to share in your enthusiasm, when he views it first this way, then that, varying the light, scowls, and at last, in tones pregnant with whole volumes of dissatisfaction, says: "Why, Doctor, the gold shows; it looks like the outcroppings of a quartz ledge." No comment on its beauty, not one word in praise of your skill, no thanks for your labor, pays with a surly air; and happens to drop into your neighbor's over the way, who does not like great, staring gold plugs or fancy jewelry-work in the mouth—*he* thinks a crown pivoted on to the old root much better practice. *Sit still, gentlemen.*

Again: Application is made to treat a case of irregularity, that to succeed in may take months of constant care and the utmost skill you possess; you explain the difficulties—the consequent pain and soreness attending the action of the necessary appliances, and how much you must rely on the fortitude and perseverance of the patient, the probable time it may take, and, above all, the faithful adhesion on the part of the patient to whatever you may deem necessary as the case progresses. You commence, and get along swimmingly for a time; the case is yielding as fast as its nature will allow with safety; you have triumphed over the worst features of the case, and hope for a satisfactory result. Young lady is beginning to show impatience; hopes she shall soon be rid of "these horrid plates, clasps, springs and ligatures;" and after you have nicely adjusted the appliance, she, when leaving the office, quietly slips the apparatus off and puts it in her pocket, and makes an afternoon call; comes in next day, and says: "Doctor, this thing came off last night." You readjust, to have it "come off" again in the same way, and so repeat again and again, making no

progress in the case. You remonstrate; explain and enforce with all your powers the reasons why you require the fixtures to be constantly worn. You complain to the mother, who excuses Anna, who "only took it off a little while when her friends So-and-so called, and then could not properly replace it, and as she wanted to go to the theater that evening, and to a ride the next day, and as she thought it would do no particular harm, she did not call to have it replaced." This explanation may be very satisfactory to the mother and patient, but in a professional point of view is very discouraging. You know from past experience that the means you are using are not appreciated, the fixtures are constantly being tampered with, and so hint to the mother, who thinks "it takes a very long time," "greatly annoys the child," and she "can see no progress made for weeks;" quotes cases which, *in her opinion*, were as difficult as this, treated by your friend over the way in half the time, to the satisfaction of all parties. You get disgusted, and are obliged to abandon the case just as success is about to crown your efforts.

This is another case, gentlemen, where *you have not done anything, you know.* No cheerful money in this case. By all means, gentlemen, take duplicate casts of all cases of irregularity you treat; they may be of use in showing that you "have done something."

Another groan. Mrs. McFaddle applies for a set of teeth; you proceed to make them, and Mrs. McFaddle tries them in, ascertains your price, and when you inquire after Mrs. McFaddle you find that three or four or more of your fellow professionals have been employed on the same case. Mrs. McFaddle knows what she is about; *she* is not going to pay for anything that does not suit her; so she employs a half dozen offices, and *she* chooses which work to take.

Groan again. You are employed in a family; go through from the "old man" to little Tommy, spending weeks of labor, stretched along through months. You of course would not present a bill to *one of the first families* till you

had finished all work required. Tommy is incorrigible; it seems as though he never would come to time. This *finishing* up a family is a very hard matter in general; but the sequel in this case shows better than if you had finished. The "old man" fails—you get a bankrupt's notice. That bill is settled.

I might go on indefinitely and multiply cases of annoyances till your ears would tingle, if they do not already so, but I forbear. The cases chosen are generic in their application, and could be almost indefinitely varied.

I will, however, just speak of one other source of evil—not so much an evil to the profession, perhaps, as to those who, unfortunately, require aid from the profession, and who are not educated to judge correctly in their choice of operators. I refer to what is known as cheap dentistry—a misnomer of the most dangerous tendency, as in the end it proves the dearest and most ruinous investment possible. The men who advertise and practice "Cheap John" operations are either fools or knaves—fools to work for nothing if their services are worth anything; knaves to take the people's money for what is worthless or injurious; fools to think the people, except the more ignorant, believe them to be sincere in their promises to give for one dollar what would cost *five* at any first-class office; knaves in their purposes of deception and fraud upon the public, and in the indirect charge of *swindling* which they by their course bring against all operators who obtain more for their labor—in the disgrace they bring upon the profession; a curse to the public, the profession, and themselves. How is it possible to pay rent and other expenses at such rates for operations as are advertised, and be honest? Let us see: "Teeth filled with pure gold at from $1 to $3; with *platina*, at half-price. Teeth inserted from $10 to $15 per set; the best of materials in all cases used, and all other operations performed in the *highest style of the art* (a favorite phrase) at like low prices." A first-class operator, by constant work at the chair, if he is rapid in his manipulations, may average

not over five fillings per day of seven hours hard labor (more fall short than overrun this)—$25. Whatever plate-work is to be done he must hire; also, must keep a general assistant; and from all sources perhaps his gross income may be, say $30 per day, which is more than the average, I think. Thirty dollars per day for twenty-six working days is $780 per month. It costs to run an average office for rent, fuel, gold and other materials, assistants, etc., *without advertisements*, say $400 per month, leaving $380 to support a family —no very great pay this, at even good, fair prices. Now take Mr. Cheap John, an equally rapid workman, equally conscientious and faithful to his patients; filling at from $1 to $3, average $2 per plug—$10 per day, $260 per month; with plate-work in the same ratio, perhaps his gross income may reach $375 per month. You see he runs $25 short of current expenses. Who believes Mr. Cheap John will long stand this? What is his only remedy? Why, *to do more work*, and consequently to do it less faithfully. Human nature is the same everywhere, and Mr. Cheap John will not belie it. I have known an operator in this city to boast of filling forty teeth in a day at $2 a piece. Who does not know that such operations can be no less than downright knavery and the grossest swindling. Many cheap operators doubtless do as well by their patients as they know how, but this is no extenuation; they should *know* better and do better, and they would get better pay for what they do.

Let us turn from these disgusting themes to something more pleasant. Even "the selfishness of man may be made to praise him." "The fault, Horatio, is not in our stars, but in ourselves, that we are underlings." The profession itself is responsible for by far the larger proportion of all the evils and annoyances herein complained of. We do not command the same respect as the other liberal professions, and consequently the public assumes a bearing towards us which would not for a moment be tolerated by other professions. One reason of this is, the rank and file of the profession is

confessedly in general education and social standing inferior to corresponding ranks in other professions. The heretofore easy access to the rank of *Doctor*, and the absence of all means of distinction between the educated and truly competent professional man and the mere adventurer, with nothing but a stock of impudence to depend upon, has contributed largely to foster this public estimate. There must necessarily, under these circumstances, be few or no common points of agreement—no well settled principles of practice—no defined code of ethics, either among ourselves or in our relations to those who employ us. Hence arise all those antagonisms among ourselves which breeds that suspicion and contempt with which the profession is regarded. Individuals may be and are recognized and distinguished, and by right hold claim to the consideration and esteem of community; but this is not true of the profession as a body, nor will it be till we insist upon higher qualifications by making higher demands of those who enter our ranks. Ours is a specialty, within the range and comprehended within the general science of medicine, and as imperatively demands, in order to a successful recognition and practice, as complete a knowledge of the principles of general medicine as any other specialty. An occulist, aurist, surgeon, or other specialist, in order to obtain standing and proper recognition in society and among the liberal professions, must graduate from some established school of medicine; and why not a dentist? He is certainly as frequently and emphatically brought in contact with conditions requiring a knowledge of general medicine as any other specialist. True, the curriculum of some of our dental colleges embraces perhaps all that is necessary for the profession *per se*, and graduation from such schools must be of value, but not sufficient to entitle the graduate ro recognition by the medical profession and society, except in inferior degree. Perhaps I overestimate the use and claims of our profession; but better that than to underrate them. I am anxious to see the profession elevated and made honorable, and to pro-

vide for the extinction of that empyricism and quackery which now curses it; and nothing promises better than a broad, liberal education. Let our ranks hereafter be filled by well educated *gentlemen*, and in one generation ours would rank the equal of any profession known among men, and all the *growls* heard this evening would be heard no more.

Meantime, gentlemen, we have something to do in the present. The *present* affects *us*. *We* live now, and it would be well to see if we can do anything to render our present condition more tolerable. In the first place, we are too widely separated in our individual relationships and interests. We make a wrong use of an excellent quality, *selfishness*. I would have no man less selfish than he is by nature; but I would have him sometimes cultivate it in different directions. Be as selfish as you choose; take every good you can and appropriate it to your own use; but remember that the true order of nature is, the greatest good is that which affects the greatest number. Nothing short of *universals* are worth appropriation by individuals. Then, what shall we do? Simply stand on justice; render it to others, and demand it in return. Faithfully do all in your power to serve those who employ you, and then demand a just reward. If patients fail to keep engagements, make it a rule to take a retainer of a stranger, and charge loss of time in all cases. If Mrs. McFaddle calls, take half your fee before taking the impression. If the gentleman who complains of the "quartz ledge" croppings still complains, why do your duty; your good works will live longer than his opinions. If Miss Anna will not wear the appliances necessary to complete the regulating of her teeth, I know of no other way for you than to "grin and bear it." If the "old man" and his family still refuse to pay you or are bankrupt, why make everybody pay as the work is done, and enter the names of all "bummers" whatever on a "black list," open to the inspection of every member of the Association; and the fellow who would give no heed to your advice, let his old

tooth go to the devil. And, lastly, as to the mythical personage "over the way," who has annoyed you all along, and vastly added, as you suppose, to the obstacles in your career to recognition and success, he has in fact been your best friend. You have benefited by the friction of his criticisms, although coming, as they have, in questionable shape; you have been constantly spurred on to greater efforts to excel *yourself* as well as your neighbor. In *some* form, this friction is necessary to all men; fewer "*wear* out than *rust* out." You observe I first designated this personage "over the way" as *whelp*, then fellow, neighbor, gentleman, friend—a toning down due to acquaintance and association; and when we can meet on level ground, and exchange friendly criticisms, and excite each other to higher attainments of skill by courteous acts of professional liberality, I have no doubt I shall find him a *brother*.

The several standing committees asked for further time to report. Granted.

Drs. Dutch, Dennis and Ball were appointed to revise the order of business.

Election of officers for ensuing year made the special order for 8 o'clock P. M. to-morrow.

Drs. Austin, Younger and Dennis were appointed to select subjects for discussion.

An amendment to the By-laws laid over from last session, creating an Auditing Committee, was taken up and passed.

Dr. Sichel was appointed on Committee of Arrangements, *vice* Dr. Park, deceased.

On motion, yearly dues of members were remitted.

Drs. T. Crossett and E. O. Belle, of San Francisco, and A. C. Davenport, of Stockton, were admitted to membership.

The committee appointed for said purpose reported the following subjects for discussion:

1. Filling Teeth.
2. Hemorrhage after Extracting Teeth.

3. Treatment of Alveolar Abscess.
4. The Cause and Treatment of Loose Teeth.
5. Treatment of Exposed Pulp.
6. Mechanical Dentistry.
7. Dental Pathology.

Adopted.

Drs. Kingsbury, Menefee and Bunnell were appointed Auditing Committee.

Adjourned to 1:30 P. M.

FIRST DAY—AFTERNOON SESSION.

Called to order at 1:30 P. M. President Knowles in the chair.

Minutes of the morning session read and approved.

The subject of filling teeth was taken up and thoroughly discussed by nearly every member present, the discussion lasting nearly three hours.

Dr. C. Hamilton, of Unionville, Nevada, was admitted to membership.

Adjourned to 8 P. M.

FIRST DAY—EVENING SESSION.

Called to order at 8 P. M. President Knowles in the chair.

Minutes of afternoon session read and approved.

An application was received from W. B. Campbell, claiming to be a member of the profession, and after being duly examined, permission was given the applicant to withdraw said application. The members, however, were unanimous in the opinion and determination to admit none to membership but those who could come well recommended as to professional honor, good moral character, etc., etc., as it is

desirous to make our Association equal to any in the United States, as far as the honor, professional and otherwise, of its members are concerned.

Subject of filling teeth again discussed.

Dr. Austin read an essay on the "Pathology and Treatment of Alveolar Abscess," which was of much interest to those present, and contained very much that was indorsed by the Association.

Adjourned to 10 A. M. to-morrow.

SECOND DAY—MORNING SESSION.

Met at 10 A. M. President Knowles in the chair.

Roll called, and minutes of last session read and approved.

Dr. Sichel exhibited specimens of Hyatt & Perkins' patent base for artificial dentures.

Dr. F. M. Shields, of Sacramento, and Dr. L. G. Yates, of Centreville, were admitted to membership.

Dr. S. W. Dennis read an essay on the "Causes of the Degeneracy of the Teeth, especially among Children," by S. P. Cutlar, M.D., D.D.S., of New Orleans, La.

The Association tendered Dr. Cutlar a vote of thanks for his kindness in furnishing the very able paper, and made him an honorary member.

The subject matter of Dr. Cutlar's essay was discussed at length.

Adjourned to 2 P. M.

SECOND DAY—AFTERNOON SESSION.

Called to order at 2 P. M., by President Knowles.

Roll called and minutes of morning session read and approved.

The following revised order of business was adopted:

1. Calling Roll of Officers.
2. Reading Minutes. (At first meeting President's annual address to follow.)
3. Reports of Standing and Special Committees.
4. Reading Essays.
5. Discussion of Topics.
6. Unfinished and Miscellaneous Business.
7. New Business.
8. Adjournment.

That portion of the President's address relating to the elevation and education of the profession was referred to the Committee on Dental Literature and Education.

Drs. Crossett, Younger and Menefee were appointed to fill vacancy in said committee.

Drs. Younger, Dutch and Crossett were appointed a committee to draft resolutions appropriate to the memory of Drs. F. A. Park and H. J. Paine, deceased since our last annual session.

The subject of "Hemorrhage after Extracting Teeth," taken up and thoroughly discussed.

Dr. Sichel favored mechanical pressure to suppress hemorrhage, where possible.

Dr. Bush related a case where profuse hemorrage followed the extracting of a deciduous superior molar. Failing to arrest it with the usual remedies, finally succeeded with *ice*, applying direct to the socket and surrounding gums.

Treatment of "Alveolar Abscess" was next discussed.

Dr. Younger claimed that not five per cent. of cases treated by him were unsuccessful. His favorite remedy was saturated solution of iodine, to be pumped into the sacs, and continued until cure is affected.

A resolution to adjourn this annual session at the close of to-morrow's afternoon session was tabled.

President Knowles, on behalf of the San Francisco Dental Association, extended an invitation to all members of this

Association to partake of a collation at Martin's Restaurant, Commercial street, at the close of the evening session.

Adjourned to 8 o'clock P. M.

SECOND DAY—EVENING SESSION.

Met at 8 P. M. President Knowles in the chair.
Officers all present except Dr. Ball, Librarian.
Minutes of the afternoon session read and approved.

Drs. J. A. Woodward, of San Francisco, and N. Klein, of San José, were admitted to membership.

Hour of special order having arrived, proceeded to the election of officers, with the following result:

Dr. S. W. Dennis, of San Francisco.....President.
Dr. H. H. Pierson, of Sacramento.....Vice President.
Dr. J. J. Menefee, of San Jose..... " "
Dr. T. Crossett, of San Francisco..... " "
Dr. H. E. Knox, of San Francisco..Corresponding Secretary.
Dr. H. J. Plomteaux, of Woodland....Recording Secretary.
Dr. J. N. Myers, of Stockton ..Assis't Recording Secretary.
Dr. C. C. Knowles, of San Francisco.....Treasurer.
Dr. A. C. Davenport, of Stockton.....Librarian.

Dr. Knowles retired from the chair, and in appropriate remarks introduced the President elect, who with the other officers assumed their respective stations, and at once entered upon the discharge of their duties.

Drs. J. J. Birge, Wm. Dutch, H. H. Pierson, S. W. Dennis and W. W. Light were elected delegates to the American Dental Association.

Adjourned to 10 A. M. to-morrow.

[After the election the Association went in a body to partake of the bountiful supply of the luxuries of life, prepared

under the auspices of the San Francisco Dental Association, when the sentiment seemed general that the meeting was a success.]

THIRD DAY—MORNING SESSION.

Association met at 10 A. M., and was called to order by the President, Dr. S. W. Dennis.

Roll called; officers all present.

Minutes of last session read and approved.

Committee on Publication reported in favor of publishing, quarterly, a periodical, under the supervision of a committee appointed by this Association.

After much discussion, laid over until afternoon session.

Committee on Mechanical Dentistry reported that they had received no information as to the merits or demerits of the Rose Pearl base presented by Dr. Smith, at our last annual session, consequently had nothing further to report concerning it.

Report of Committee on Dental Literature and Education was made as follows, and referred to Publication Committee:

Mr. President and Gentlemen: We regret very much not having more time to report upon these very important subjects. It was not until the report was called for, that I was aware of whom the committee was composed, it being omitted in the published proceedings of last year. The only matter I *did* remember was that I was *not* Chairman, so I gave myself no concern, trusting entirely (unwisely) in the Chairman to discharge the responsibility. My mind having been largely absorbed in the transactions of this session, I do not now feel able to do justice to the subjects committed to us, consequently, in presenting this brief and incomplete report, am obliged to ask your indulgence.

Dental literature is a matter that calls loudly for our attention, support and encouragement. We have published

in the United States *five* ably conducted and influential dental journals—"The American Journal of Dental Science," "Dental Cosmos," "Dental Register," "Missouri Dental Journal," and "Dental Times." I am a subscriber for all except the last named, and it appears equal to the others, and I willingly admit that it ought to occupy a place beside them in my dental library. No member of the profession ought to be without these journals, and if they are, they and their patients are the greatest sufferers.

We believe that a Dental College on the Pacific coast is not only necessary, but expedient; that it is not only a strong instrument, a wholesome medium through which to acquire a more thorough dental education for the members of our profession, but it is a channel through which the public may gain a higher appreciation of the human teeth. We believe that many practitioners of dentistry and many people do not regard or treat the human teeth as an important part of the human body. Such people ought to be instructed at the earliest opportunity, that the teeth are organic and invaluable, and when diseased should be treated with as much judgment and skill as the vast explored and unexplored fields of the dental science can bring to bear. We believe that the best way to reach those fruitful and luxuriant fields lying so beautifully and invitingly in the distance, is by dental education, and believe that such education can be best obtained through Dental Colleges.

We believe it is very generally understood that the qualifications for graduation in both Dental and Medical Colleges should be placed at a much higher standard than what is now required. Until this is done, they will fall short of the high and God-like mission they are called upon to fulfill.

Many claim that there is no honor or profit in a diploma from a Dental College, because some who get them do not honor them. We believe this idea all sophistry. We should not expect more from our profession, in this particular, than from other professions. It is a foregone conclusion, a fixed fact, that education is elevating, and if a man is a *good den-*

tist, with a limited education, he would be a much better one with a thorough education.

We believe that Dental Colleges teach dental physiology, dental pathology, chemistry, and *all* the branches pertaining to the dental structures, in a more scientific manner than any other school or organization; therefore we recommend that some action be taken at an early date for the establishment of such an institution of learning on this coast, that members of the profession may avail themselves of the golden opportunity of securing that which is so much needed. Circumstances over which some practitioners have no control would render it very difficult for them to leave their extended practice and responsibilities to secure in the East what might be secured here, should such an educational institution take its place among the increasing and model institutions of learning in California.

Dental association comes next in order as a means of imparting information to the profession and the people. Dental associations do, and ought to, devote more attention to the practice than to the theory of dentistry. All of us should do our might to bring clinics into professional favor. Through this instrumentality we may hope to do more good than by any other means.

We have said too much, and our opinion is too well known, upon the subject of associated efforts of the rank and file of the profession, to consume any more of your valuable time now and here.

We believe a State law is absolutely necessary for the suppression of empiricism and mountebankery. Not so much for the protection of the dental profession and the honest and conscientious operator, as for the protection of the public. The *faithful* operator is protected by a higher law than the law of man. "Whatsoever ye would that men should do to you, do ye even so to them," which is being constantly breathed into him by the protecting and guardian angel of truth and love, until it becomes a part of his being, a part of his professional life, and then he needs no law of man for

his protection. He is daily rewarded by the infinite satisfaction of having done his best, and feeling that his labors are appreciated.

We earnestly recommend that a committee be appointed to frame a bill for a State law to regulate the practice of dentistry, and that it be instructed to use every possible means and dispatch honorable to secure its passage.

When this is accomplished we shall have done well.

All of which is respectfully submitted by

S. W. Dennis, Acting Chairman.

Several resolutions of amendments to the Constitution were read, and laid over under the rule until next annual session. (See proceedings of 1872.)

Dr. Belle offered a series of resolutions, relative to certificates of membership, which was referred to Drs. Knowles, Birge and Menefee.

Dr. Knox offered the following, which was adopted:

Resolved, That our delegates to the American Dental Association be, and they are hereby instructed to use all their influence that the session of 1872 of said Association be held in San Francisco.

Notice was given that previous to the commencement of the afternoon session Dr. Knox would illustrate the use of the "Rubber Dam."

The Finance Committee report the books and vouchers of Treasurer correct.

Amount of receipts last session	$185 00
Disbursements	52 00
Balance in treasury	$133 00

(Signed) J. J. Menefee,
F. E. Bunnell,
W. B. Kingsbury.

The President was authorized to fill any vacancy that may occur from death, during the coming year, in any of the standing committees, by appointment through the Recording Secretary.

Adjourned to 1:30 P. M.

THIRD DAY—AFTERNOON SESSION.

Called to order at 2:30 P. M. President Dennis in the chair.

Minutes of morning session read and approved.

The following preamble and resolutions were unanimously adopted :

WHEREAS, It has pleased Almighty God, in his infinite wisdom, to remove from our midst our late brothers, Drs. F. A. Park and H. J. Paine ; therefore,

Resolved, That in the death of brothers Park and Paine, the dental profession has been deprived of two of its most active, efficient and honorable members ; and the community, of just and upright citizens.

Resolved, That we, the members of the California State Dental Association, deplore the grievous loss which their families have sustained, and cordially sympathize with them in their great bereavement.

Resolved, That the Corresponding Secretary be instructed to forward a copy of these resolutions to Mrs. F. A. Park, and Mrs. H. J. Paine, and that a copy be spread upon the minutes of this Association.

DR. W. J. YOUNGER,
DR. WILLIAM DUTCH, } Committee.
DR. T. CROSSETT,

The following report was read, and referred to Drs. Knowles, Crossett and Menefee, to be reported on at our next annual session :

Gentlemen of the California State Dental Association:
Your committee have had under consideration the subject of

dental education, as presented in the able address of our retiring President, and heartily approve his suggestions; and recommend that stringent rules should be adopted to prevent the introduction of any further additions to our membership, except to those who shall satisfactorily answer a proper form of questions, without reference to the pretended time of practice; and trust that a resolution will be framed by which our members will be required not to fellowship with any one who has not a well established reputation for scientific attainments, unless he passes the ordeal of examination.

We further recommend that a committee be appointed to devise some plan whereby students may be assisted in obtaining a more thorough dental education than has been heretofore available upon this coast.

T. Crossett,
J. J. Menefee,
S. W. Dennis,
} Committee.

Committee on Publication reported estimates of cost of publishing monthly periodicals, size of the "Dental Office and Laboratory," and of "Missouri Dental Journal."

Dr. Knowles offered the following:

Resolved, That it is expedient that a dental periodical be published under the supervision of this Association.

Referred to Committee on Publication, with instructions to ascertain the facts relative to aid from the members, probable number of advertisements to be secured, etc.

Dr. Dennis read a letter from Dr. E. A. Boyne, soliciting aid to prepare a suitable testimonial for Dr. S. C. Barnum, inventor of the rubber dam.

Dr. Dennis made a pressing appeal in behalf of said inventor, and the matter was referred to a committee consisting of Drs. Knowles, Younger and Dutch, to take into consideration the propriety of making some substantial recognition to Dr. Barnum for his valuable invention, and our delegates to the American Dental Association were in-

structed to use their influence for some general plan, whereby a suitable national testimonial can be secured for Dr. Barnum.

The President appointed the standing committees for the ensuing year, as follows:

Committee of Arrangements—Drs. Birge, Davenport, Shields, Yates and Dutch.

On Publication—Drs. Dennis, Plomteaux (*ex officio*), Knowles, Younger and Bunnell.

On Scientific Investigation—First Section, Operative Dentistry—Drs. Dutch, Menefee and Pierson. Second Section, Dental Chemistry—Drs. Light, Sichel and Bell.

On Dental Pathology and Surgery—Drs. Austin, Crossett, Prather, Kingsbury and Klein.

On Mechanical Dentistry—Drs. Woodward, Bush, Myers, Cool and Hamilton.

On Dental Literature and Education—Drs. Knox, Younger, Crossett, Eaton and Knowles.

Auditing Committee—Drs. Menefee, Light and Myers.

San Francisco was chosen as the place for next annual session.

On recommendation of Dr. Dennis, Profs. J. H. McQuillen, Homer Judd, and J. Taft were declared honorary members.

The President assigned subjects for Theses, to be read at next annual session, as follows:

Dental Therapeutics—Dr. Knox.

On the Cause of Degeneracy of the Teeth—Dr. Birge.

On the Causes of Irregularity of the Teeth, and best method of correcting the same—Dr. Knowles.

On the Pathology and Treatment of Alveolar Abscess—Dr. Menefee.

On Dentistry: its history, present status, claims and relations—Dr. Plomteaux.

On Professional Ethics—Dr. Bunnell.

On the Causes and Treatment of Loose Teeth—Dr. Younger.

CASH STATEMENT.

Debtor.

To balance on hand last session.....		$138 50
To receipts present session.....		40 00

Creditor.

By disbursements.....	$91 15	
By cash on hand.....	87 35	
	$178 50	$178 50

The Treasurer was authorized to settle all just bills that may be presented against the Association after adjournment.

On motion, adjourned to meet in San Francisco, second Tuesday in June, 1872, at 10 A. M.

DR. H. J. PLOMTEAUX,
Recording Secretary.

TRANSACTIONS

OF THE

California State Dental Association,

AT THE

THIRD ANNUAL SESSION,

HELD AT SAN FRANCISCO,

COMMENCING JUNE 11, 1872.

DISCLAIMER.

The California State Dental Association, although formally accepting and publishing the reports of the various standing committees, and the essays read before the Association, holds itself wholly irresponsible for the opinions, theories or criticisms therein contained, except when otherwise decided by special resolution.

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OFFICERS, 1872-73.

President,
WM. DUTCH, San Francisco.

First Vice President,
J. J. MENEFEE, San Jose.

Second Vice President,
J. N. MYERS, Stockton.

Third Vice President,
S. M. HARRIS, Grass Valley.

Corresponding Secretary,
H. E. KNOX, San Francisco.

Recording Secretary,
H. J. PLOMTEAUX, Woodland.

Assistant Recording Secretary,
L. G. YATES, Centerville.

Treasurer,
C. C. KNOWLES, San Francisco.

Librarian,
J. J. BIRGE, San Francisco.

TRANSACTIONS

OF THE

California State Dental Association.

THIRD ANNUAL SESSION.

Mozart Hall,
San Francisco, June 11th, 1872.

The Association met and was called to order, pursuant to adjournment, at 11 o'clock A. M., by the President, Dr. S. W. Dennis.

Roll of officers called, and officers all present, except Vice President Pierson, who was absent from the State.

Hours of meeting agreed upon as follows: Morning sessions, from 10 o'clock A. M. to 12 M.; afternoon sessions, from 2 o'clock to 5 o'clock P. M.; evening sessions, from 7 o'clock to 10 o'clock P. M.

Dr. S. M. Harris, of Grass Valley, and George McCowen, D.D.S., of Ukiah City, were admitted to membership.

Adjourned to 2 o'clock P. M.

AFTERNOON SESSION.

Called to order at 2 o'clock P. M. President Dennis in the chair.

Minutes of morning session read and approved.

Drs. D. M. Hughes and S. E. Knowles, M.D., of San Francisco, were admitted to membership.

President Dennis then read his annual address, which was referred to Committee on Publication.

PRESIDENT'S ANNUAL ADDRESS.

GENTLEMEN: There is nothing I am called upon to do in the discharge of my duties, as a professional man, that I attempt with so much reluctance and doubt as to give expression to my thoughts, on paper, to be read before a public body; but unless a man have a natural gift, or has been educated to public speaking, he could hardly expect, or be expected, to give expression to more than a few ideas otherwise, in an orderly and an entertaining manner. Had I been governed by the dictates of my own feelings and conveniences, I should have come here unprepared to do more than to proceed with the business of this Society, without absorbing any of your attention or time by reading an introductory paper; but an old custom and our order of business have marked out clearly my line of duty, and as my predecessor has transmitted the custom to me, so I will hand it down to my successor.

"We take no note of time, but from its loss."

Twelve months more have been taken from our credit-page of allotted years and inscribed on our debtor-page of the eternal past since our last meeting.

The handiwork of Time
Has 'graved another line
  Upon our faces
For the year just gone by;
The old lines deeper lie
  Upon our faces.

The silver hairs have grown
Upon the templar bone
  And round our faces;
For the year just gone by
They whiter seem to lie
  Upon our faces.

We are now about to enter upon the third year of our existence as the first State Dental Society on the Pacific coast. I suppose, of all things, that men are called upon to do, it is one of the most difficult and trying to found and work into running order a government, or an association of men, who have hitherto been drifting about upon the great high sea of life without any compass or purpose. For more than twenty years this has been about the condition of the dental profession on the Pacific coast. It has seemed like a deserted ship upon the mighty deep, floating about entirely at the mercy of the storm and tide; though its wanderings have been watched with anxious solicitude by some members of the profession, and when the first opportunity offered, they boarded, manned and saved her from the inevitable destruction that seemed to await her, and then put her on her course; and now she has been sailing proudly, safely and successfully onward for three years, and after some experience, some rough weather, we are satisfied that while *light spars* may be of some use in a *mild breeze*, the mainstays and upright timbers are much safer and more to be depended on for usefulness than the trifling sticks that can be blown away so easily at every little breeze. We are anxious for all those to ship who would like to join us in our labors, who are willing to take their turn at the wheel and stand their watch, that we may be borne safely and successfully upon this great voyage of professional life and progressive wealth.

I can conceive of nothing so much at variance with the will and wisdom of God, as a multitude of men without a government or an organization. It is the fundamental law of the universe. The beasts of the fields, the birds of the air and the bees of the forest have their organizations and their social compacts, and the latter, through the perfectability of their government, send sharp and swift destruction on those of their kingdom and principality who do not work and help to accumulate their subsistence, that they shall not eat the fruits of others' toil, and add insult to injury by saying, in the language of many human drones: "I knew that

twenty years ago." "That is just the way I do it." "That is nothing new to me."

For nearly all of our knowledge and power, we are indebted to self-sacrificing and public-spirited men. But for Columbus, no doubt civilization would have been retarded, religious liberty suppressed, and freedom unborn for many generations, through the tyranny of illiberality, selfish aggrandizement, bigotry, ignorance and sin. It is to our self-sacrificing revolutionary fathers that we are indebted for our national existence and honored country.

It is the same spirit of public good and unselfish devotion that enables us to meet here to-day in common council for the public well-being, under our common flag and a united country at peace. And who will dare to question the motive of professional men who leave their practice, their homes and families, bearing their expenses to remote parts of States and the United States, to deliberate on some way, some better way, to meet the demands of suffering humanity?

When I attended the National Dental Association, which convened at Nashville, Tennessee, I thought it a venerable sight to see the gray locks waving upon the devoted heads of many of the members who have passed the meridian of life, and are on the decline of professional usefulness. It matters not in what part of the nation the Society meets, you will always find them at their accustomed place of duty, to lend their support and give the profession the benefit of their experience and observation. They have nothing to gain, except the glory of having done their whole duty to the profession and the people.

Dentists have been called "tooth carpenters," and "tooth mechanics," and some justly deserve these names, even at the present day; but they certainly are not applicable to those industrious and adventurous pioneers who have courageously and energetically gone before into the wilderness and driven back the tribes of barbarism, cleared away the underbrush, sown seeds of civilization, built temples of education and knowledge, until our profession commands the

services of men rich with intellectual culture, social and moral worth, and the respect of the whole civilized world for the advancement they have made by extending their sphere of usefulness beyond the mere act of filling a tooth, which in itself is purely mechanical.

Were it not for our associated effort, the energy and industry of which our societies are made, the green fields that are now under such a high state of cultivation, the trees that are so thrifty and prolific with choice fruits, would soon be overcome and supplanted by the weeds and suckers of inactivity and indolence; and in a short time all of this work of our professional civilization would be turned into a wild waste of worthless weeds and flowers (indicative, perhaps, of the natural richness of the soil), until in a short time only here and there could a tree be found that could derive nutriment enough from the sapped and overburdened soil to enable them to stand above this useless vegetation that besets them on every side. It is a hard fight now. I know of nothing that is more to be pitied than a human being of intellectual attributes, capable of self-culture, who is simply satisfied to be borne along by the inevitable tide of life, accepting nothing as a fact, only that he gets hungry if he don't eat, and dies if he don't breathe. Such men are a burden to themselves, an incubus to society, and an obstacle to human progress, and seem just fitted by their demented and demoralized condition to be executioners of the human teeth—the most ignoble and degraded ambition within the jurisdiction of our profession.

It is a lamentable fact, that this class of men in our profession (as well as the medical) are irresistibly drawn into the vortex of professional progress which makes them always the borrowers, and never the lenders, of ideas, or merely the instruments to execute the work of active and designing minds. They are always in the rear, like the wake of a ship, and their usefulness is constantly diminishing, until at last they are so far in the rear that they hopelessly blend with the great tide of life, and then are seen and heard no more, except while mingling with the elements in discordant and destruc-

tive billows, to execute the laws of nature, and perhaps equalize the currents of human events.

Now, what is wanted is more practitioners who are willing and anxious to be on the prow of the ship, instead of the rear; who desire to stand at their full hight, to catch the first fresh breeze that shall help to waft them onward to that sphere above what may be termed popular dentistry.

What is popular dentistry? It is the greatest number of fillings for the smallest sum of money, irrespective of professional merit. Of all things within my professional comprehension, there is nothing so suicidal and fatal to the human teeth as the public patronage of that class of practitioners which caters to the demand for cheap dentistry, except the practitioner who *yields* to the demand. Until the people are educated to look upon and treat the human teeth as vital tissue and a part of the human body, until they offer a premium for the practitioner to do his best, instead of his worst, the number of dentists who have the intellectual and *moral* endowments to carry their operations to the highest excellence will be few, and the services of those few will be sought by the people who have earliest come to an understanding of the relative value of the dental organs, as well as the services of those operators who seem to seek to save them.

The people must bear in mind, that if they go from office to office to find a dentist who will deal with a tooth for a consideration consistent with their appreciation of the human tooth and the almighty dollar, they will not have to go far to find a being who seems to believe in total depravity and filling teeth for whatever be can get, and as "misery loves company," these two unfortunate beings seem for a time to be happy in each other's society and praise; but while the unfortunate patient—victim—goes away rejoicing that he has got so much done for so small a sum of money, the knave is *also* rejoicing that he has got so much money for so small an expenditure of moral, intellectual and physical force. The above remarks would *seem* to apply particularly to the ignorant pretenders, but these are not so dangerous as the

educated knaves or *incompetent* practitioners who make public confidence in certificates of education subservient to their selfish and mercenary ambition.

There are some practitioners of whom I would like to speak, who from their professional relation occupy high places in the public confidence (misplaced confidence); but I will leave my thirst half gratified by saying that, as we have some practitioners who know their *Alma Mater*, and, I believe, would do credit to any profession or calling they might assume to represent, I will leave both the educated and uneducated charlatans to the fostering care of the Committee on Dental Education and their own consciences, and say something on the necessity of a more extended classification of the arts and sciences.

Education is the cultivation of the intellectual faculties to a more thorough or definite comprehension of the laws of the universe. The Creator is so infinitely wise, and the mysteries of his wonderous law so vast, that we can hardly hope to gain more than a limited understanding of a fractional part of a subdivision of the whole.

It is said, Sir Isaac Newton was once found by himself, weeping; he was asked the cause of his grief, and replied that it was because he was so ignorant of the heavenly bodies. And thus it is in all departments of human knowledge and science; those men who best understand the arts and sciences engaging their attention and study, feel most sensibly and keenly their inability to grasp the whole or penetrate the misty distance that lies beyond their power and allotted years. No doubt, Benjamin Franklin saw in the dim distance the rich developments that have been made by Prof. Morse; likewise, no doubt, Prof. Morse saw as plainly before his death some half-buried ember of law and light that would be fanned to a flame by some studious electrician, who would take the science from their immortal hands and bear it onward and upward, until some of the darkest wonders and doubts of our time are converted into light and sunshine for the benefit of our posterity.

When a man attempts to take in too many branches of knowledge and science, his brain becomes confused, like the tongues of the children of Babylon, when they attempted to go beyond their sphere or to get to heaven by a tower.

I was informed by a gentleman who was present, only a few days since, that a clergyman of this city, while in a conversational debate with a special practitioner of medicine, said that all specialties were humbugs. I presume he spoke from his own standpoint; however, he has gained considerable celebrity by giving his undivided attention to his own creed. I am unable to see how any casual observer could make a remark or assertion so far from the truth or facts.

In all departments of education, those men who have concentrated their study on some particular branch of science have made the greatest discoveries and rendered humanity the greatest service. But a few years since the human eye was thought to be too complicate and delicate an organ to be made a special study or to be disturbed by human hands; but through the instrumentality of a specialist their diseases have been traced into hundreds, treated and cured, and many eyes that appeared to look "two ways for Sunday," have, by the blessings of special education, been enabled to look this reverend gentleman fairly and squarely in the face, and tell him, while his religious doctrines might be true, his assertions were not always so.

Through well-organized schools for special education, the mind can be taught to conceive, and the hand to execute, great deeds in the alleviation of the sufferings of humanity. What has been said of the human eye will apply as well to other parts of the human body. When the study and practice of medicine is more subdivided, then many diseases that are now beyond the comprehension of the general practitioner will be more fully understood and successfully treated.

DENTAL JOURNALS.

I feel as though many pages ought to be devoted to this important topic. They have done more toward the advance-

ment of the general profession than any other medium. If every practitioner understood his position and duty, every important truth would find its way into the dental journals, and the journals would find their way into every dentist's office or family in the United States.

But, sad to say, how poorly supported by subscribers. It is a disgraceful commentary on the profession of the Pacific coast, that among two hundred practitioners there are only eighty-four dental journals distributed; and if each subscriber took only one of five journals published there would then be one hundred and sixteen practitioners on the Pacific coast who do not read them at all, and who are as unconscious of our professional progress as though they had been born and raised in the middle of the great Desert of Sahara. But the plain facts are worse than this. There are five dental journals published in the United States, and I know of some in our profession who take all but one, leaving it pretty certain that there are about one hundred and fifty dentists on the Pacific coast who are "voting for Jackson yet."

I will not speak of the merit of these respective journals. They are all good, and are as ably conducted as any journals in the country, and every number contains matter which if carefully perused would be of far more value to the reader than the subscription price—$2 50 per year. "The Dental Cosmos," "American Journal of Dental Science," "Dental Register" and the "Missouri Dental Journal," are the only ones that I know of that are taken, and but eighty-four numbers of these (all told) are subscribed for among us. I heard one of our best practitioners say, not long since, that he did not read the journals; and I will not attempt to describe how much he dropped in my professional esteem.

I know and think he feels conscious that he is falling behind the age, and failing to recognize great and important truths as they are brought to light by energetic practical writing and reading men. We owe a great deal to these publications. They are the only medium through which professional intelligence can be communicated throughout the

country, and particularly to those who do not or can not avail themselves of the advantages of Dental Associations.

Let me enjoin on all members of this body (if they are not already subscribers) to subscribe at once for these dental periodicals, that they may grace your offices, contribute to your professional intelligence, and give their sustenance and support.

THE RUBBER DAM.

The vehicle of thought is inadequate to the magnitude of this question. Language is helpless as the fœtus in embryo, for it seems to me that too much can not be said in praise of, and too much never can be done for, Dr. S. C. Barnum, of New York, for his application of the rubber dam in dental operations, and his generous gift of it to the profession. A great idea, which might have been patented and made a source of almost fabulous revenue to him who has waived it for the benefit and advancement of his chosen profession and the well-being of the human race.

Millions of human teeth through its use will be saved and wrought into golden monuments to his memory, and enabled to articulate distinctly those letters and words that would otherwise have gone hissing through diseased and disfigured teeth through all time.

I assured the American Dental Association that when this method of operating was better understood in California, that she would take her place among the appreciative contributors toward a suitable testimonial for the inventor and donor, and asked that whatever I did I might have an opportunity of doing it in conjunction with my professional brethren of the Pacific.

This year I shall be glad, as I should have been last, to do my might toward a fund for Dr. Barnum, that shall be in keeping with California's generosity and the magnitude of his munificent gift to us; otherwise, I shall be obliged to add it to the Eastern fund that is being collected for Dr. Barnum's reward.

Gentlemen, our profession was born of necessity of the mis-

fortune of the human family. Whatever tends to benefit us as practitioners of our profession, benefits each individual member of that family which makes our interest common. We are the teachers and guides of public opinion in matters pertaining to our profession. As we advance or retrogade, so the people follow. Governing our action by their laws, the upward tendency of our individual and social effort is plain to be seen. Great successes in all departments of life are the result of concert of action. The old maxim, "old men for council and young men for war," is simply a unison of effort between the wisdom and experience of age and the energy and vigor of youth; and he who does not join hands with his brother practitioner for mutual advancement, fails to comprehend the design and wisdom of his Creator.

When the Indian ally was asked to divide his troops into three detachments, he said, you take three sticks and you can easily break them in detail, but put them together and they are strong. "In union there is strength," and "in a multitude of counselors there is wisdom." I have quoted so little in this paper, you will pardon me if I requote a sentiment embodied in an address delivered before the American Dental Convention: "By the contact of mind with mind, both will be strengthened; embryo ideas and theories will be developed into full maturity. There is magnetism in such contact, full of creative energy. Flint and steel are passive within themselves, but clash them together and they give out fire, and brightness dazzles upon the sight. The positive and negative poles of a battery never come together without a result. By friction of different mental organizations, an idea is evolved and a new law is discovered; a new creation is added to the wealth of knowledge, and the long coming rays of a new truth, like those of a far-off star in the laboratory of Heaven, reach and illumine the world."

There is not a dentist in the world, deserving the name, who does not owe his present professional status to associated effort. Recognizing these facts, it is our duty to do everything within our power to further the advancement of dental

science, to associate ourselves in harmonious intercourse and discussion, to blend the interchange of thoughts—mould the noble deeds of action into an institution acceptable to God, commendable to men, and subservient to the wants and necessities of the human race. Let us lead not into temptation the weak, but deliver from all evil the wayward, and then we will have for our support and encouragement the grace of God and the good-will of mankind.

Let us not be unmindful of the fact, that to be professionally strong is to live within due bounds of the laws of life. Let us man well the helm of reason and steer clear of the breakers of dissipation, for he who is wrecked upon that satanic, bleak and barren shore, is doomed to sink lower, lower, lower—never to realize that vigorous mental, moral and physical meridian that was the anticipation of his early manhood, and would have been the fruits of industry and sobriety.

[Received with applause, and referred to the Committee on Publication.]

DISCUSSION.

William Dutch, D.D.S., Chairman of Committee on Operative Dentistry, read a very interesting report. Said that properly prepared cavities should be as free from undercuts as possible; all fissures thoroughly excavated, and orifices thoroughly smoothed, to make perfect points. Soft foils were not indispensable, yet most difficult operations can be safely undertaken with cohesive foils, by the faithful operator; all would fail when used by the *unfaithful*. Of heavy foils, prefers the rolled to the beaten; urged perseverance in the application of the rubber dam, as it well repays for all time and trouble, as success is attained with it, where failure is certain without it; considered the burring engines indispensable to the operating room.

In answer to a question, Dr. Dutch said he never sacrificed any portion of the teeth that could be saved; protects weak

walls by lapping the gold over them to prevent their being forced away by antagonizing teeth, or other causes.

Dr. Knowles used soft, light foils, No. 4 principally, against frail walls, to avoid the difficulties of perfect adaptation incurred by the heavy; the heavy leaving microscopic angles, creases and crevices; generally finished up with the heavy; influenced by circumstances; very seldom uses retaining pits. In contour fillings, uses thread-cut wires to build around, anchoring them in the dentine, sometimes as many as three in a tooth, thus retaining fillings securely that could not be by the ordinary *pit;* always finds space to insert them in *living teeth*, between pulp and enamel, without injury to pulp. Advocates smooth folding of foil.

Dr. Roberts "crimps" his foil; is not afraid of injuring it by contact with *clean* fingers. All agreed that fine points, frosted or slightly serrated, were best for adhesive gold.

Drs. Prather and Plomteaux used the broken *points*, spoken of in the March number of the "Missouri Dental Journal," almost universally; believed that none who tried them would use any others.

On motion, all reports and essays were to be passed over to the Secretary immediately after their reception.

On motion, Dr. Knowles' subject for thesis, viz., "The Causes of Irregularity of the Teeth and Best Methods of Correcting the same," was made the special order for 8 o'clock P. M., and all members having specimens pertaining to it were invited to present them.

Dr. Menefee read an interesting essay on "The Pathology and Treatment of Alveolar Abscess," which was discussed until the hour of adjournment.

Dr. Dutch was appointed to clinic at his office at 1 o'clock P. M. to-morrow.

Adjourned to 8 o'clock P. M.

EVENING SESSION.

Called to order at 8 o'clock P. M. President Dennis in the chair.

Reading minutes dispensed with.

Hour of special order having arrived, Dr. Knowles exhibited models of a large number of difficult cases of irregularity that had been under his treatment; also the appliances used in their correction; conclusively showing that the most difficult cases can be bettered, if not entirely overcome, by skillful treatment and perseverance; believed one of the principal causes of irregularity is that the child inherits the teeth of one parent and jaws of the other. Much injury is likely to result by too rapidly moving the teeth. When correcting irregularities, the mouth should be kept in as healthy condition as possible during the operation, by aid of such remedies as each case may demand.

Dr. Sichel read a report on dental chemistry. He said he used as a substitute for red vermillion, in vulcanite, the following preparation: Dissolved oxide of iron in nitric acid, put in crucible, and anneal to smelting heat; cool, pulverize and mix with the rubber.

Adjourned to 10 A. M. to-morrow.

SECOND DAY—MORNING SESSION.

Called to order at 10 o'clock A. M. President Dennis in the chair.

Reading minutes dispensed with.

Drs. Woodward, Bush and Myers, of Committee on Mechanical Dentistry, reported no important improvements; believed gold in proper hands a *good and proper base* at all times, especially in partial sets; Allen's continuous gum work secures the most correct expression and articulation, and is very desirable for entire sets.

Dr. Cool generally used vulcanite metal lined, especially all partial sets, with Nos. 18 or 19 alluminum. Plates thus lined never gave way.

Dr. Dennis believed any material, improperly manipulated, would produce irritation by mechanical action; believed rubber had been injurious to the profession on account of its wholesale use by incompetent and dishonest operators.

Dr. Plomteaux did not believe in condemning any material, simply because quacks used it; would advocate the use of any material that had merit in it, when properly manipulated.

Dr. C. C. Knowles had not the slightest doubt but that gold work, when properly adjusted, would answer every purpose of mechanical dentistry; believed vulcanite far superior to any other cheap base extant, and that it had been a great blessing to the world; "that it had been a curse to the profession," we may well entertain different opinions; does not believe there is a well-authenticated case on record of its noxious character, or injury to the mouth, when properly cured and manipulated.

Adjourned to 2 o'clock P. M.

AFTERNOON SESSION.

Called to order at 3 o'clock P. M. President Dennis the chair.

Minutes of yesterday's P. M. session and this A. M. session read and approved.

Dr. Knox made the following written report on Dental Literature and Education, which was discussed by Dutch, Crossett, Knowles and others.

MR. PRESIDENT: It is with feelings of no little embarrassment that we come before you at this time to present this report on "Dental Education." The subject is one of great importance, and we feel totally unable to present it in that light which its importance demands. Much has been said

by able writers upon the subject, and when we read the report on dental education presented at the National Association at Nashville two years since, we felt that we could add nothing of interest in this report. However, craving your indulgence, we will very briefly submit a few thoughts and suggestions as they present themselves to our mind.

In the first place, we feel it to be of the highest importance, that the person desiring to become a student of dentistry should have, before commencing his dental studies, a thorough English education; to which, we think, might be added, with great advantage, a knowledge of Latin, as most of our medical terms are in the Latin language. Without a good English education as the foundation stone, a thorough dental education is next to impossible; it is like a ship at sea without a compass. Many dental students undoubtedly feel as they are about commencing their dental studies, that it is wholly unnecessary to spend so much time, study and practice, before they start out on their professional career; they are ambitious to receive the title of Doctor, and it matters little to them what their qualifications are, so long as they have an office and their sign out. Such students read a little on operative and mechanical dentistry, and think that is quite enough for their purpose. The person who takes a student has surely taken a very great responsibility upon himself, and we feel that he should not assume such a responsibility without he really intends to fulfill his whole duty toward his student. He should plan out and insist upon a thorough course of reading; should often question his student upon the subjects passed over; should see to it that no point of interest or advantage to the student in after-life is omitted. It is in the office and laboratory of the preceptor that the dental student receives the basal principles, and we would urge a most thorough course of office and laboratory instruction in all the various branches, and not only in theory, but in practice. The dental student may have the theory by heart, but if he has not the practical education as well, he is of little use as a dentist. The instruction should

be systematic, and the application of the principles taught should be demanded at the chair and in the laboratory. It is not an easy matter to determine just how long a student shall study before taking his first course at a dental college; but from our own experience, we would recommend that it should be as early as one year after he had commenced, because in a year's time he should be sufficiently acquainted with the several branches taught, especially anatomy, physiology and chemistry, as to be able to understand the subject-matter of the lectures and instruction given at the college. At college, we would recommend that the student take as full notes as possible of the lectures delivered on the several branches, which will serve to fix the subjects taught in his mind, so that on returning to his preceptor's office and laboratory, he is prepared to go forward intelligently in his course of study; he has, as it were, landmarks to guide him as he climbs the hill of science, and he feels that he has a good start in the right direction. Few men of eminence in our profession would take a student and teach him, just for the mere love of teaching, because it would necessarily take a good deal of his time, and we feel that he who takes the responsibility of a preceptor, should be fully compensated for the time spent, for with most of us the old adage, "that time is money," will be applicable. The charlatan takes a student as a matter of convenience and profit; he is put into the laboratory as the surest way to excite his enthusiasm, the surroundings are so cheerful and attractive, and he is taught that the *ne plus ultra* of his ambition should be entirely satisfied when he is able to put up an artificial denture on vulcanite base. We would not, by any means, wish to undervalue thorough laboratory instruction, but object to its being made more prominent than the operative branch of dentistry, which we consider by far the more important of the two. No one should enter upon a course of dental study, unless he had made up his mind to compensate his preceptor for the time spent in his instruction, and had counted the cost from beginning to end. He should weigh the subject in

all its bearings, and then make up his mind. When once fully made up to go forward, if he had no means provided at the start, he would find ways and means to accomplish the desired end—"for where there is a will there is a way."

In the operatlve branch of dentistry, we deem it of the highest importance that the student should have daily practice at the chair. Let him have his own patients, and let the work be done under the supervision of his preceptor. It is true, that much valuable time will be thus consumed; but let the man who takes a student do his whole duty by him. He should, in a kind manner, point out defects and show their remedy; should teach cleanliness (for cleanliness is next to godliness), gentleness in all his manipulations, and in all things that shall be for the student's advancement. We are of the opinion, and fully believe, that when we raise the preparatory standard higher, and asking just compensation for the instruction given at the chair and in the laboratory, that very many who now join our ranks, and who are a disgrace to our noble profession, would never come in, but better men would join, who would be an honor to the profession they had chosen.

We consider a college education of very great importance, for it stimulates the real student to renewed zeal in his pursuit of knowledge; he is ambitious to stand high in his class, and in after-years be an honor to his profession and honor his *Alma Mater*. We sometimes hear sneering remarks about this and that graduate; but the fault is with the student, and not with the college instruction. There are men who graduate from all colleges, who are a disgrace to themselves and the institution from which they graduate—not from any letting down in the standard of scholarship, but because those students "cram" for examination, and manage to get the required number of marks to entitle them to a diploma, and then the highest pinnacle of their ambition is reached, and they go forth to prey upon the credulous public. Not so with the true student at college. He sees new avenues of thought daily opening under the guiding instruction of the

several professors; the field of knowledge is all the time expanding; and when he graduates, *as he will*, with credit to himself and his instructors, he feels that he has just laid the foundation upon which he can rear the noble structure of dental science and art. The professors in our colleges should be men of culture and moral standing; and we feel that they should be supported by the colleges, and not as now, in some instances, support the colleges by their own means, while at the same time they are obliged to attend to their own practice. We feel that too much is expected of the professors in our colleges. Their province is to teach; the students, to learn. In speaking of dental colleges, although we feel that at present there are too many colleges for the number of students, yet we would most earnestly recommend that a dental college be commenced on this coast, either alone or in connection with one of our medical schools, and that aid be solicited from the State, as well as private subscriptions, so that at the start we might be enabled to employ the very best talent in our profession and be a self-sustaining institution, so that the young men on this coast who wish to become dentists could receive a thorough dental education without the expense of going East.

We would suggest that efforts be made at the next session of our State Legislature to have some law passed in this State (as it has been in many of the Eastern States already) regulating the practice of dentistry, so that charlatans would find no abiding-place on our shores.

In regard to text-books, we have felt the need of those especially adapted to our wants. It is true, we have works on operative and mechanical dentistry; but on physiology, pathology and therapeutics there are none, and the dental student must depend on those works prepared especially for the medical student. We would recommend that the dental student should also take a full course of medical lectures, if possible, and be not only a D.D.S., but an M.D. We feel that works published expressly for the dental student, which should embrace all the knowledge of medical science neces-

sary, and general anatomy, physiology, pathology and chemistry, which are the fundamental branches, should be thoroughly mastered by him who would be a scientific practitioner of dentistry. Improved text-books, specially pertaining to the teeth and adjacent parts, on anatomy, physiology, surgery and chemistry, should be at his disposal, besides those on operative and mechanical dentistry. To thoroughly master these would require more time than is generally given to the study of law or medicine. But we want the men in our profession to be men of high mental culture and strict integrity. When this is the case, our noble profession will take her place in the front ranks of the professional world. While we should all strive to educate ourselves daily to a more elevated standard of professional excellence, and mutually educate each other, we should not lose sight of the fact that we have a most sacred duty to perform toward those with whom we come in contact, to so educate the public mind that they may see and know the difference between the true man of science and the quack. We should teach them the importance of their teeth and the best means of preserving them, and how much their general health depends on having their food well masticated. It seems as if some general plan might be adopted where useful knowledge pertaining to dentistry might be published, so that each practitioner could distribute them among his patients and friends. Most of us ere long will pass from active scenes and practice, and our places will be filled by others. Let us, each and all, do our whole duty earnestly and faithfully while life and health are spared to us, and may we all, at last, hear our Judge say: "Well done, good and faithful servant."

The following resolution was unanimously adopted:

Resolved, That a committee of five be appointed by the Chair, to report at our next annual session, what they may deem expedient relative to State legislation, for the regulation of the practice of dentistry.

Drs. Plomteaux, Knowles (C. C.), Knox, Younger and Menefee were appointed said committee, and, on motion, President Dennis was added.

Auditing Committee reported books and vouchers of Treasurer correct.

To balance in treasury last session..		$133 00
To receipts of last session.....		40 00
By disbursements.....	$91 15	
By balance on hand.....	81 85	
	$173 00	$173 00

J. J. Menefee, J. N. Myers, } Committee.

Dr. Birge read an essay on Causes of Degeneracy of the Teeth. Accepted.

Dr. Crossett presented a pathological specimen, consisting of a large tumor, recently removed from the mouth of a San Francisco patient.

A vote of thanks was tendered Dr. Dutch for his interesting and efficient clinic, being the first on operative dentistry given before the Society.

Dr. Knox nominated Professor J. Foster Flagg, of Philadelphia, and Wm. H. Atkinson, M.D., of New York, and Dr. George A. Mills, of Brooklyn, N. Y., as honorary members, and they were unanimously elected.

Adjourned to 8 o'clock P. M.

EVENING SESSION.

Called to order at 8 o'clock P. M. President Dennis in the chair.

Minutes of afternoon session read and approved.

Dr. Crossett read an interesting paper on Dental Pathology and Surgery, which was received with applause.

Drs. Henry C. Davis and William S. Davis, of San Francisco, were admitted to membership.

Dr. Plomteaux read the following entitled essay:

DENTISTRY—ITS HISTORY, PRESENT STATUS, CLAIMS AND RELATIONS.

Mr. President and Gentlemen: Unhappily, this subject was assigned *me* by our worthy President, and if any apology be due for the valuable time occupied in submitting my brief remarks, I beg you to ask it of *him*, for his utter "dis regard of consequences" in making said assignment.

DENTISTRY

Is defined by Webster as "the art, or profession, of a dentist;" whilst a dentist is one who makes it his business to clean, extract and repair natural teeth, and to insert artificial ones.

By Harris: "dental surgery"—embracing everything pertaining to the treatment and replacement of the loss of the natural teeth. Dental surgery—"that branch of medicine which has reference to the treatment of the diseases of the teeth and their connections, and which at the same time embraces the prosthesis, or replacement of the loss of these organs with artificial substitutes.

In the introductory chapter of the latest edition of "Harris' Principles and Practice of Dentistry," it is defined as "the science and art of medicine applied to the dental organs."

As to which is the most appropriate definition, I will not venture an opinion. Perhaps one more appropriate than either might be given.

With these remarks regarding dentistry, we proceed to speak of

ITS HISTORY.

In that very able paper entitled: "History and Progress of the Art of Dentistry," read by Dr. F. E. Bunnell at our first session, we are informed "that but little evidence of the

antiquity of our art" is to be found in looking through the history of past ages.

I have, unfortunately, been so situated as to be unable to gain access to any very extensive libraries; but in all my researches I have been unable to find any very satisfactory light on the state of the dental science in primitive times.

Unlike other professions that have attained the scientific standing of our own, we are without a work containing as full and complete history as might be obtained from the records extant. The need of such a work is much felt, especially by those just entering the study of dentistry—and such a work, if issued, would soon find a place in every dental library in the land, Let us hope that some of our worthy authors may use their talents in this direction.

From Renouard's "History of Medicine," we learn that the art of dentistry formed among the Egyptians, a particular branch of surgery, and was practised by men more or less ignorant of the rest of the medical science, and that physicians, from the earliest times of which we have any record, occupied themselves more or less with it.

Herodotus, "the father of history," who flourished about 440 years B. C., says that "the care of the teeth was assigned to certain members of the healing art," and was thus practiced long before his time among the Egyptians.

The origin of surgery being coeval with that of medicine, dates from the earliest periods of the human race. The minute description of the operation of circumcision, in the laws of Moses, indicate the possession of surgical knowledge among that celebrated people of one of the oldest nations of the world.

The Egyptians were said to have been such proficients in the early sciences and liberal arts, that men came to them from all parts of the world to acquire information and gather facts for *their* improvement.

That great book of books, the Bible, gives us a most authentic history of the existence of the medical science at a very early period, for in the fiftieth chapter of Genesis we

find that physicians were commanded to embalm the body of the Patriarch Jacob when he died.

It has been written, time and again, that good fillings of gold have been found in the teeth of exhumed Egyptian mummies, that were buried at Thebes more than three thousand years ago. So far as we are concerned, we shall not credit the report that said fillings were placed there by some ambitious Yankee dentist, who was anxious to furnish *positive* testimony of the existence of our art in a very high degree of perfection at a very remote age. If it will be of any benefit to the science, or any concerned, let us admit that the fillings were actually placed there during the lifetime of the Egyptian by a skillful operator, assisted in his manipulations by use of light and heavy adhesive foils, rubber dam, automatic plugger, dental engine, and mallet boy.

Hippocrates, styled the "father of medicine," born about 539 B. C. (some writers say 460), gives some precepts regarding the treatment of diseased teeth; as does Celsus, also, who practised surgery at Rome in the beginning of the Christian era.

Ætius, of Alexandria, Egypt, who flourished in the fifth century, gave, perhaps, the most correct knowledge regarding the anatomical description of the teeth relative to their being supplied with nerves from the fifth pair, or trifacial. He also recommended galbanum and resinous substances for filling teeth when much decayed. He is credited with being the first to advocate the use of the file upon the teeth, recommending the free use of it for correcting irregularities—a grave error, however, which would not be tolerated in these times of educated skill.

Albucasis is the first who speaks of dental prosthesis—substituting for lost teeth others fixed to their places by threads of gold or silver. He flourished in the twelfth century.

Guy De Chauliac, of the fourteenth century, makes complaint that the operations upon the teeth have been abandoned to the barbers and bath-keepers, and other artizans deficient in the technical knowledge of the evolutions of the

teeth. "Operations," says he, "of such importance that no physician should disdain to undertake, or, at least, assist in them."

Ambrose Pare, of France, of the sixteenth century, created a new period in surgery, both by his practice and his writings. He described the manner of replacing teeth and the use of obturators, and is said to have been the first that authoratively reports the successful transplanting of teeth.

During this century the first work of any consequence on dentistry was published by Eutachius, the distinguished Italian anatomist.

During the seventeenth century quite a number of works on dentistry were put forth—France and Germany especially doing much in this direction, whilst Austria and Prussia also published some that were said to appertain to dentistry, although rather indirectly.

Not, however, until the eighteenth contury, we are told, "do we find many practical dentists who have borne our science along as a speciality." During that century France is said to have had "scores of able men in the field devoting their talents and energies to the advancement of our profession, and many of their works are held in high esteem today.

1774 is recorded as the year in which porcelain teeth are first mentioned; and the fact of their having been successfully made by a chemist and porcelain maker of Paris, under the instructions of an apothecary who first conceived the idea, was reported to the French Academy in 1776. Even in those days, it appears, there were dentists as rapacious for patents as in our day—for it is recorded that about that time Musseur de Chamant (possibly, from the name, a forefather of the Cummings family), said to have been a distinguished dentist of Paris, *claimed* to have made an improvement on the invention of the apothecary, for which he obtained a patent from Louis XVI for the exclusive right to make and set them. We are also told that he—very justly we consider—encountered violent opposition from the rest of the dentists, probably

on account of the patent, for an exclusive right to set them, granted the said-to-be inventor.

Although it is altogether probable that in that day, as in this, there existed wise old fogies who were eternally opposing every new discovery or idea that did not originate with them; and the only idea that ever did originate with that class in any profession or calling in life, is the idea that they so far excel their fellows as to be beyond improvement or need of assistance from brother practitioners, and the only discovery made or to be made by them, is to discover that in wrapping themselves up in their own conceited self-sufficiency they have so shut out the light of advancing science, that they are as completely enveloped in darkness regarding the correct theories and practice of dentistry in their day, as the writer of this is regarding the date and manner in which the fillings were inserted in the teeth of the poor Egyptian mummies.

About this time—1776—many of the English dentists were doing that for the science, in the way of putting forth works relative to it, that will ever entitle them to be classed with those of authority in the age in which they lived. I deem it unnecessary to give their names here, as they are too familiar to all you who love your profession to that extent that causes you to seek for knowledge regarding it by the perusal of everything pertaining to it, whether of ancient or modern origin.

It was also in the year 1776 that the first regular dentist located in America—Robert Woffendale by name, a pupil of the celebrated English dentist Berdmore. He located in New York in that year.

About 1774 Dr. James Gardette—the first to apply suction, or atmospheric air, to retain artificial teeth in place—located in Philadelphia, where he practiced forty-five years. He was among the first to use gold, *extensively*, for filling, and made many valuable discoveries, that gave him a great name in his time among the profession.

A whole volume could be filled with interestiug and truthful biographies of those members of the profession that have

been the recognized leaders of it, in their time, from the beginning of the nineteenth century to the present day; and another, equally interesting, might be filled with a history of the various appliances, modes of operating upon and treating the different diseases of the dental organs, during the same period; but for a paper of this kind, I have already written too much for the time I have passed over, consequently must hasten on.

During the first quarter of the nineteenth century very slow progress was made in dentistry on this continent, although in France and England many able and scientific men were earnestly laboring upon what we can only consider as the foundation of a future greatness for the dental science. About the beginning of the second quarter of the present century, however, we can justly claim that the dentists of progressive America, who had been taking such long and rapid strides, in the great march of improvement, steadily advanced to the front, and from that to the present time have claimed and been the recognized leaders of the profession, not only in America, but throughout the civilized world.

In the year 1839 the Baltimore College of Dental Surgery was established, under charter, by special enactment of the General Assembly of the State of Maryland, being the first dental college in the world for the express purpose of teaching the science and art of dentistry. By its establishment and continued efforts of advancement, ours has been elevated to the rank of a liberal profession, and as time has rolled on it has received the assistance of other institutions of a similar character, increasing in numbers until we now have some dozen first-class dental colleges on this continent, while not one exists in any other part of the world.

Only thirteen short years ago—1859—twenty-six members of the profession, representing eight local societies and two dental colleges, pursuant to a call for a meeting with the object in view of organizing an association to be composed of delegates from State and local societies and dental colleges, met at Niagara Falls and succeeded in organizing.

During all the intervening years the Association has held its regular annual meetings—with the exception of the year 1861—with an unprecedented harmony, and productive of benefits to all its members, for *there* annually meet the great heads of our profession, mingling with the humbler lights, and subjects and questions are discussed, evolving new facts of vital importance in all the several departments of our science. To-day, gentlemen, we have, in addition to our national society, a State society in nearly every State in the Union, and local societies by the hundreds, and it is with pride to every lover of the professsion that we can point to the fact that all or nearly all the most talented and skillful operators are the prime movers in instituting and maintaining these associations. Whilst most of them are men with large practice, and independent, so far as worldly goods can make them independent, of need of assistance from the rest of the profession, yet are they so imbued with a love for the standing and good name of our specialty, that they cordially meet the humblest operator, who, if honorably following his vocation, striving to do the very best that he knows how to do, at all times and under all circumstances, they are ever ready to instruct and impart what has cost them years of study and practice to obtain.

I will not longer detain you with this division of my subject, but with the following quotation from the "American Journal of Dental Science," I close it:

"Dentistry in the United States.—The dental profession in the United States, it is understood, comprises 13,000 members, who earn an aggregate income of $24,000,000. The annual expenditure for materials amounts to $2,000,000, and for office rents to $3,000,000, leaving $19,000,000 as the net income of the profession. (This would be about $1,460 to each member.) There are nine dental colleges in the United States, from which 1,807 persons have graduated. The profession supports several dental periodicals, with an aggregate circulation of 12,900 copies. There are no dental colleges in the countries of Europe. Dentistry previous to

the present century did not occupy the position of a profession, but its practitioners, it is said, were to a great extent quacks. In consequence of the greater skill of dentists of the present day, the tendency of the practice is to *save* the natural teeth and to avoid the necessity of inserting artificial ones."

What else we have to say of the history of our science will be said under the head of

ITS PRESENT STATUS.

We now come to an epoch in the history of dentistry that is of far more importance to us than the part just passed, which, up to the beginning of the present century, is so profoundly enveloped in obscurity. It is now that we find our science has arisen grand and majestically from obscurity, to claim and maintain a place side by side with the other learned sciences, and no longer are we compelled to grope our way in darkness, as our science has been gradually unrobed of the grave and mysterious forms with which it was clothed only a short time ago.

Our present status is the most brilliant in the history of dentistry, and it is owing principally to the studious and communicative spirit in matters relating to our specialty, that is so generally diffused throughout the profession, that we are enabled to work upon a truer basis, and by this fraternal feeling there are being many correct theories put forth, that appear to us so very natural and beneficial that we conceive with difficulty why they were not sooner discovered.

We are just entering, we may say, upon an era in which some of the most learned and profound minds are laboring unitedly to permanently establish the dental science upon an enduring foundation, that it may rank side by side with and claim the respect awarded to the other professions.

The time has gone by when the celebrated Drs. Donothing, Knownothing, Cheaper-than-the-cheapest & Co., can impose themselves upon the intelligent public to any considerable

extent, as men entitled to their confidence or even respect; and may we not correctly attribute this great change to the efforts of our representative men—men of high scientific standing, that have become professors in our dental colleges —leaders in our dental societies (that are becoming so numerous throughout the land), and valuable contributors to our dental literature—periodicals so well filled from month to month with original communications, the quality of which will rank with those of like journals published in the interests of any other profession.

The future welfare of our profession depends upon the thorough education of and sound doctrines enunciated by its practitioners, and the time is near at hand when none but men of ability and integrity will be tolerated as practitioners, for those who are too indolent to work their way up to a correct renown by earnest application and unceasing study will have to make way for the energetic and ambitious, who, if true to their science, will, though they may not find their names enrolled among those of great renown, find that they have endeared themselves to their co-laborers and those who have been so unfortunate as to be compelled to secure their professional services, and also have the consciousness of having done all that within them existed to maintain an honorable reputation for themselves and good name for the profession, and furnishing good examples for those who may follow after.

Although dentistry really had no existence as a science until the present century, our status is superior to that of many older sciences, and our wonderful progress is admitted to be much greater than that of any other specialty of the medical science, especially as regards the perfectness of the instruments and appliances of the operative department, effectiveness of our medicinal remedies, and the tools of the mechanical department. Such a degree of perfection has been arrived at only by long and weary years of close study, practice and experiment, made by our progressive members, frequently under circumstances the most discouraging.

My fellow co-laborers in the field of dental science, let us do *our* duty, whatever the opposition, not only to maintain our present status, but to assist in advancing it in the future as rapidly as in the past. Let each one of us labor as if the whole future prosperity of our profession depends upon our individual exertions, and the most favorable results in all our undertakings will be our reward.

A few words upon our

CLAIMS AND RELATIONS,

And I have done:

We claim that dentistry is a specialty of the medical science, and this seems undeniable, as identically the same anatomy, physiology and pathology are taught the dentist and physician; but dental therapeutics widely varies from the therapeutics taught in medicine. But I fear that our relations with the medical profession as such specialists are not such as are most desirable. While it is true that the occulist and aurist are readily recognized in their specialty by the medical fraternity, to a very great extent we are ignored. The province of dentistry is second in importance to no other domain of the medical science and art, and our teachers and practitioners, so far as skill, intelligence and activity are concerned, are not inferior to those of medicine. I am fully aware that in some of the Eastern cities the proper relations between dentists and physicians are recognized and maintained; but this is the exception and not the rule.

I am proud to be able to state, that in the city in which we reside the medical and dental practitioners sustain their proper relations to each other, frequently holding consultations relative to the operations and treatment of their patients. I am also pleased to say, that our physicians, almost without exception, have become cognizant of the fact, that it is impossible to successfully treat most diseases, especially those of a nervous character, whilst the dental organs are in a diseased condition, if the disease exists to any considerable extent. Hence we find many patients seeking our professional ser-

vices by the advice and direction of their physician, and it is not uncommon for us to accompany the physician to the residence of the patient to perform operations at his request, according to our judgment, when the patient is unable through bodily infirmity to come to the operating room. Those physicians who make it their practice to see that the dental organs of their patients are kept in a healthy condition are invariably successful, whilst those who pay no attention to the matter are unsuccessful. Wherever you find the true physician and gentleman combined, and a dentist who is using all his talents to purify and advance the science, and making every effort in his power to become a skillful and scientific member of the profession, you will find that the proper relations between them are ever maintained.

I am painfully aware, that one great cause of our not being more fully recognized by our medical brethren, is the fact that so many who claim to be dentists are so notoriously ignorant in all that pertains to theory that they are regarded only as mere mechanics.

The following extract from the "Southern Journal of Medical Science" is to the point:

"A responsible position in society is that occupied by the dentist. At the present day we have a right to expect that every man pursuing the vocation shall be an educated man—that is, that he shall have what we ordinarily term a fair preliminary education; and in addition, and as more directly connected with his pursuit, a reasonable acquaintance with chemistry, anatomy (more especially the local anatomy of the face), physiology, and the principles of medicine and surgery. If he falls short of such qualifications, no matter how quick he can extract a tooth, no matter how glibly he can talk of molars, incisors, bicuspids, etc., etc., he is a charlatan. Just as the deficient doctor of medicine stands condemned before the world, so should such a so-called dentist."

I presume, there is not one progressive dentist but who hopes for the day, and that not far distant, when none

claiming to be dentists will be allowed to practice, unless the happy possessor of a diploma from a respectable dental school. It is true, many of us have been so circumstanced in life that it has been impossible for us to obtain the honorable title of D.D.S.; but I will venture the assertion, that if a dental college was instituted on this coast we would find all the progressive members of our society—and I hope that includes all—striving to have said title honorably and worthily bestowed upon them (those excepted of course who have already acquired it).

Many of you, it is true, have acquired a good theoretical knowledge of the science of dentistry by aid of the text-books extant, and long years of practice may have made you operators of such success as to gain for you the reputation of first-class practitioners; yet none of us fails to recognize the fact, that the only proper way to acquire a correct knowledge of any science to which skill is to be applied is by regular and systematic courses of study under competent teachers, such as are to be found in our dental schools, acknowledged to be as intelligent, well posted, earnest and zealous teachers as can be found in the schools of any other profession.

Should we expect all our claims, as members of a great and advancing science, to be recognized by an intelligent and discriminating people, and sustain our true relations to other sciences and all with whom we come in contact, we must put forth every effort possible to become honored and useful members of our profession. No matter how humble our origin as dentists, we can accomplish all that is desirable if we but have an earnest determination. If we would gain a good theoretical and practical knowledge of all that pertains to our science, we must apply *ourselves* to a close study of our text-books and dental literature, and enter into active co-operation with our societies in their organized efforts, contributing our mite, however small it may be, to assist in the great work of dental reform.

We never look forward to a time when every dentist will fully comprehend and take in the whole field of labor that

will legitimately belong to the science; nor is it necessary that they do in order to be regarded as worthy members of the profession—for we can not all attain to the same degrees of skill in the several branches of our science, even though the same facilities be offered alike to one and all.

I am painfully aware that very many in judging of the merits of our organization, or profession, take as a standard some of its weakest members, instead of those who rate even medium, or the merits of the principles themselves upon which the profession or organization are founded; and this manner of judging seems to be the rule and not the exception. But let us content ourselves with the fact that such judgments emanate only from shallow minds—those too superficial to penetrate even into the depths of reason, but are content with drifting surface-thought; a style of reasoning not creditable to a people boasting of large enlightenment and civilization. Such judgments, gentlemen, have robbed many a worthy hero in all the various walks and callings of life of crowns of earthly fame.

Heretofore the majority of the people have judged of the merits of our profession by the merits of the numerous *quacks* who have overrun our land—those who enter the profession only temporarily, not for the purpose of gaining knowledge of our art and science, or for casting in their mite to help elevate, educate and refine the members thereof, or to alleviate the sufferings of humanity, but simply for the purpose of pecuniary gains. These are the "dead weights," the "hangers on"—mere leeches, sucking the life-blood from the profession, and preventing it, so far as they can, from rising in the estimation of other professions and the public to that importance and dignity to which it should rise, and to which it must arise before we can hope to be awarded all we claim for it, or to sustain our proper relations with other professions and to each other.

It is no uncommon thing to find those who by and through the aid of dentistry have well filled their purses and doing all in their power to prevent the elevation of it, relying upon

their moneyed influence and the ignorance of their patients to continue them in a lucrative practice so long as they shall desire to follow it.

The true and honorable man enters our profession with his heart in the work. His motives are higher than the mere gratification of personal desires, and the aggrandizement of self, and the less laudable purpose of pecuniary gain. He realizes that upon him to a greater or less extent depends the future welfare and usefulness of the profession.

Let us maintain broad and liberal views and elevated principles as regards our professional brethren, yet a spirit of independence and justice that will impel us to do our duty under all circumstances for the advancement and elevation of the science; never entertaining feelings of hostility towards our brethren, whether above or below us in knowledge or scientific attainments; ever frowning down any attempt to elevate the *unworthy* by indorsing them even to the extent of admitting them as members to our Society, yet never permitting personal dislikes, petty jealousies or prejudices to stand in the way of meeting all issues that come before us in a manner creditable to ourselves and with honor to our profession; at all times maintaining a character of kindness that will prove us the possessors of a pure manhood, and good sense enough to learn from the weakest, as well as the greatest, anything that will benefit us and assist us in keeping up with the great improvements of the age. We will then more properly maintain our true relations with each other. It is far better to expose our ignorance in seeking aid from our superiors in knowledge and experience than to ignorantly perform operations that may prove injurious to our patients and our reputations.

In conclusion, permit me to say, that the labor to be performed by the progressive dentist is not of the lightest nature, for we should not only labor for the present welfare of the profession, but endeavor to educate those who are just entering it, so that they may avoid the many errors of theory and practice that we have combated with. If we do this we

will find that the fields of labor presented are broad and extended, reaching in every direction, even as far as the human family itself; and if so inclined we can find much of deepest interest to occupy all our leisure moments, for there is much yet to be revealed relative to our science that can not be learned in one, five, ten, or any limited number of years. It is a science and art, broad, deep and high, reaching from our first lesson in it through life, and when we have performed our last operation and quitted the operating-room for the last time, and passed through the shades of death, and been lost in the gloom that veils the entrance to eternity, there will be enough yet unrevealed to occupy the minds and life-long labors of those who may succeed us.

Election of officers made special order for 8 o'clock P. M. to-morrow.

Adjourned to 9:30 o'clock A. M. to-morrow.

THIRD DAY—MORNING SESSION.

Called to order at 9:30 o'clock A. M. President Dennis in the chair.

Minutes read and approved.

Committee on Publication reported that they deem the publication of a dental periodical under the auspices of this Association, for the present, inexpedient, and recommend that further consideration of the subject be indefinitely postponed.

Recommendation adopted.

Dr. Knox read an able essay on Dental Therapeutics.

Notice given that Dr. Knox would clinic (filling teeth) at his office at 1 o'clock P. M.; Dr. Dennis at his office at 9 o'clock A. M. to-morrow (administration of nitrous oxide gas and extracting teeth); Dr. Sichel at his office at 9:30 A. M. to-morrow (method of preparing oxychloride of zinc).

Resolutions of amendment to Constitution, offered at last session, taken up and adopted. (See Con.)

Also a resolution of thanks to the San Francisco Dental Association, for the magnificent banquet given us at the close of the last annual session.

Drs. Plomteaux, Knowles (C. C.), and Knox, were appointed to report for consideration of the Association at next annual session, "a revised Constitution, By-laws and Order of Business; also to report a Code of Ethics and Rules of Order."

A vote of thanks were extended to the several railroad and steamer routes that furnished "free return tickets" to our members.

Dr. Dutch, delegate to the American Dental Association, spoke at length of the recommendation of said body relative to formation of local societies and necessity of appropriate instruction to the profession generally. A long and interesting discussion followed on the elevation and education of the profession, and the necessity of educating the public up to the necessity of paying more attention to the subject of dentistry.

Adjourned to 2 o'clock P. M.

THIRD DAY—AFTERNOON SESSION.

Called to order at 2:45 o'clock P. M. President Dennis in the chair.

Reading minutes dispensed with.

Dr. Younger read an essay on "The Causes and Treatment of Loose Teeth." He generally removed the cause of loose teeth, and treated surrounding parts with tincture iodine; did not believe in the use of acids for removing tartar; preferred fine instruments. If skillfully used will not injure the periostium.

Dr. Knowles prefers chloride of zinc to tincture of iodine; believes it more of a stimulant to the soft parts.

Dr. Dennis treats similar to Dr. Younger; has frequently reproduced the gums by said treatment.

Dr. N. Shrewsbury, of Santa Barbara, was admitted to membership.

A vote of thanks was tendered to the press of the State for the very generous and extended manner in which it has given notice of our Association.

Dr. Dutch, on behalf of the San Francisco Dental Association, invited the Association to partake of a collation, under their auspices, at Martin's Restaurant, Commercial street, at 6 o'clock P. M. to-morrow. The invitation was unanimously accepted.

The Corresponding Secretary, Dr. Knox, read letters from honorary members Judd, Taft, McQuillan and Cutlar, thanking the Association for making them honorary members, etc.

Dr. Dennis, on behalf of the author, Oliver Wendell Holmes, presented a pamphlet entitled "The Claims of Dentistry."

Dr. Dennis read a paper entitled "What Makes Teeth Decay," which was accepted, and discussed to hour of adjournment.

Adjourned to 8 o'clock P. M.

THIRD DAY—EVENING SESSION.

Called to order at 8:30 o'clock P. M. President Dennis in the chair.

Hour of special order having arrived, reading minutes dispensed with.

ELECTION OF OFFICERS.

The following officers were elected for the ensuing year:

Wm. Dutch, D. D. S., of San Francisco.....President.

J. J. Menefee, D. D. S., San Jose.....First Vice President.

Dr. J. N. Myers, of Stockton.....Second Vice President.
Dr. S. M. Harris, of Grass Valley.....Third Vice President.
Henry E. Knox, D. D. S., of San Francisco..Cor. Secretary.
Dr. H. J. Plomteaux, of Woodland....Recording Secretary.
Dr. L. G. Yates, of Centreville....Assist. Record. Secretary.
Dr. C. C. Knowles, of San Francisco.....Treasurer.
Dr. J. J. Birge, of San Francisco.....Librarian.

Officers elect assumed their respective stations.

Vote of thanks extended retiring officers for the excellent manner in which they had discharged their several duties.

Adjourned to 10 o'clock A. M. to-morrow.

FOURTH DAY—MORNING SESSION.

Called to order at 10:30 o'clock A. M. President Dutch in the chair.

Minutes read and approved.

H. W. Calvert, of San Francisco, was admitted to membership.

Dr. Roberts read a letter relative to the circumstances attending the death of Mrs. O'Shaugnessy, under the influence of nitrous oxide gas, in New York City, March 20th, 1872; after which the following resolution was adopted:

Resolved, That we, as a body, discountenance the indiscriminate use of anæsthetics, by dentists, for the extraction of teeth; and, furthermore, that when such agents *are* necessary, their administration should not be undertaken by any one not thoroughly acquainted with their influence upon the patient, and having always at hand all the best known restorative agents.

Notice given that Dr. Knowles would clinic at his office at 1 o'clock P. M.

Adjourned to 2 o'clock P. M.

FOURTH DAY—AFTERNOON SESSION.

Called to order at 2:45 o'clock P. M. President Dutch in the chair.

Drs. S. E. Knowles, H. H. Pierson, S. H. Roberts and S. W. Dennis were elected delegates to the American Dental Association, and the President and Secretary authorized to appoint and issue credentials to a sufficient number to complete the full delegation to which we are entitled.

A vote of thanks was given Drs. Knox, Dutch, Dennis, Knowles and Sichel, for their very interesting and instructive clinics given before the Association during its present annual session.

The Recording Secretary was voted one hundred dollars, for his services and expenses during the past year.

Treasurer authorized to pay all just bills against the Society that may be presented after adjournment.

By invitation of the Association, Dr. Crossett read a paper on Dental Literature and Education. The following resolution, *apropos* of the subject, was referred to the Committee on Dental Literature and Education, to be reported on at next annual session:

Resolved, That as a Dental Association, we will secure the columns of some public print (if it can be done at a reasonable expense), by which all members of the Association may have a medium through which information may be diffused among the mass of our population within this State; all articles to be supervised by the Publication Committee.

On motion of Dr. Dennis, a committee of five were appointed to devise ways and means of securing a suitable testimonial to Dr. Barnum, for the free-gift of his valuable invention—the *rubber dam*—to the profession.

Drs. Dennis, Austin, Knowles, Myers and Menefee were appointed, and, by vote, Dr. Dutch was added.

The President appointed the following Standing Committees for the ensuing year:

On Arrangements—Drs. Austin, Sichel, Klein, Myers and Cogswell.

On Publication—Drs. Dutch and Plomteaux (*ex officio*), Knox, Dennis and Bunnell.

On Operative Dentistry—Drs. Dennis, Pierson and Woodward.

On Dental Chemistry—Drs. C. C. Knowles, Prather and Belle.

On Dental Pathology and Surgery—Drs. S. E. Knowles, Harris, Kingsbury and Wilbirt.

On Mechanical Dentistry — Drs. Menefee, Spencer, McCowen, Bush and Calvert.

On Dental Literature and Education—Drs. Crossett, Cutlar, Yates, Eaton and Lundborg.

On Auditing—Drs. Birge, Kingsbury and Cool.

It was resolved, to hold the next annual session at San Francisco, commencing on the third Tuesday in May, 1873, at 10 o'clock A. M.

Dr. Shrewsbury recommended the following formula, which he claimed would entirely paralyze the nerve in a very short time, the only originality claimed being the proportion of its ingredients. In many cases, when using the several agents for destroying nerves, the cauterizing gets the start of the paralyzing element, which never occurs with this preparation:

Recipe—Arsenicum, gr. x.
Tannin, gr. xv.
Sulp. Morphia, gr. xx.
Creasote, gt. x.

Receipts of the session, $175; expenditures, $156 25.

Adjourned to meet in San Francisco, Tuesday, May 20th, 1873.

H. J. PLOMTEAUX,
Recording Secretary

TRANSACTIONS

OF THE

California State Dental Association,

AT THE

FOURTH ANNUAL SESSION,

HELD AT SAN FRANCISCO,

COMMENCING MAY 20, 1873.

DISCLAIMER.

The California State Dental Association, although formally accepting and publishing the reports of the various standing committees, and the essays read before the Association, holds itself wholly irresponsible for the opinions, theories or criticisms therein contained, except when otherwise decided by special resolution.

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OFFICERS, 1873-74.

President,
C. C. KNOWLES, San Francisco.

Vice President,
J. J. MENEFEE, San Jose.

Secretary,
H. J. PLOMTEAUX, Woodland.

Corresponding Secretary,
H. E. KNOX, San Francisco.

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TRANSACTIONS

OF THE

California State Dental Association.

FOURTH ANNUAL SESSION.

San Francisco, May 20, 1873.

Pursuant to adjournment, the fourth annual session convened in St. Andrew's Hall, Young Men's Christian Association building, and was called to order at 10 o'clock A. M. by the President, William Dutch, D.D.S.

Prayer was offered by Rev. Dr. H. Cox, of San Francisco.

Roll of officers called. All present except third Vice President, Dr. S. M. Harris, who was absent on account of illness.

On motion, the President was requested to postpone his annual address until 3 o'clock P. M.

Alexander Warner, Jr., D.D.S., J. W. Winter, C. W. Richards, and D. J. Nis, of San Francisco, and G. C. Hoadley, of San Jose, were regularly admitted to membership.

Agreed, that the daily sessions be held from 10 o'clock A. M. to 12 o'clock M; from 2 o'clock P. M. to 5 o'clock P. M., from 7 o'clock P. M. to 9 o'clock P. M.

A vote of thanks was tendered to Dr. Cox for his clerical services in opening the meeting.

Adjourned till 2 o'clock P. M.

FIRST DAY—AFTERNOON SESSION.

Convened at 2 o'clock P. M. President Dutch in the chair. Minutes of morning session read and approved.

F. H. Hubbard, M.D., of Sacramento, J. J. Dyar, of Santa Cruz, W. H. Stanley and D. Vandenburg, of San Francisco, applied for membership. Applications referred to Committee of Arrangements.

On recommendation of Dr. Dutch, O. D. Munson, of San Francisco, a retired member of the profession, was elected an honorary member.

The committee having made favorable report on the above applications, the applicants were elected to membership, and Drs. Hubbard and Dyar were admitted.

Dr. Bunnell stated that Prof. Gilman, President of the University of California, is willing to address the Association upon the subject of the formation of a Dental College in connection with said University; therefore, he offered the following resolution:

Resolved, That a committee be appointed by our President to extend to President Gilman an invitation to address this Association at 7:30 o'clock P. M. to-morrow.

Unanimously adopted.

President Dutch then delivered his annual address, as follows:

ANNUAL ADDRESS OF PRESIDENT DUTCH.

Gentlemen of the California State Dental Association: It is with mingled feelings of pleasure and regret that I rise to address you—pleasure, at having the honor of being the pre-

siding officer of so distinguished an organization; regret, fearing my inability to fully discharge the duties entrusted to me. Nevertheless, there is a time in all professional men's lives when we have misgivings as to our ability to fully discharge the duties imposed upon us. Trusting that the duties, so far as I have been able to discharge them, and the suggestions I may make, may meet with your kind consideration, I have concluded to open my address by a few remarks on the origin of our profession.

The origin of our specialty may have been lowly; but its history has precedents. The progress of nations repeats itself; so, the histories of professional callings. The zeal of the unlettered often furnish that which afterward claims, from its importance, the undivided talents of the educated. Under the fostering care of the latter, the tender shoots planted by the former, are made to grow, blossom and bring forth fruit. Modern scientific surgery was cradled in the barbershops of Europe. So, the specialty of dental surgery was first practised by those whose scientific attainments hardly claim our respect; yet, the order which they exhibited, and the results of their labors, lay us under deep obligations to theory.

The treatment of the teeth is of ancient origin, for the teeth have been cared for since the days of Herodotus, who tells us that among the Egyptians there were physicians who devoted themselves exclusively to their treatment. But, as a branch of surgery proper, it is of modern origin. The dentist of fifty years ago was a far different man in point of education from the dental surgeon of to-day. The dentist of 1820 was a man of mechanical skill only. His cure for the toothache, and panacea for all the ills to which the teeth are liable, was the turnkey. He displayed his delicacy of manipulation in carving artificial teeth out of bone and ivory, and in adapting them, in a rude way, to be worn in the mouth.

The dental surgeon of to-day has been educated in colleges (or should be), so organized as to furnish him with all

the knowledge which the accumulated labors in medicine and the collateral sciences can bring to bear to give him the most thorough insight into the structures, functions and diseases of the teeth and mouth. He should be perfected in all the delicate operations by which *teeth* are *saved* instead of being sacrificed. His artistic and mechanical skill should be cultivated to the utmost, to enable him to rival nature in the artificial dentures which he is called upon to supply. In addition to this special knowledge, he should have mastered the general principles of medicine in the fundamental departments of anatomy, physiology, chemistry and pathology.

More progress has been made in the last ten years of our profession than in the fifty previous; and this great activity in the dental profession is, in part, due to the increased facilities which we possess in disseminating and comparing observations through the mediums of the *dental journals* and the organization of workers everywhere into societies for mutual improvement and general progress; and to-day, the American dentist can be recognized by the superiority of his operations, for the combined nations of the world accord to him supremacy in this our specialty, by seeking our colleges to perfect themselves in their profession. We, of California, isolated as we have been from our Eastern brethren, imbued with the progressive spirit of the age, have instilled an enthusiasm into our profession that is worthy of emulation. (Already has our sister State, Oregon, come into line, by the organization of the Oregon State Dental Society, and Godspeed them in their good work.) In looking around, it is surprising what rapid progress some of our professional brothers have made in the quality of their operations; and this is not confined to the lower walks of our profession, but holds good with those who have reached some of the higher rounds of professional fame, prompted by a pleasant spirit of rivalry to do their best under any and all circumstances.

Commensurate with this is the interest exhibited by a generous public, in a demand for the finer class of dental opera-

tions, and their willingness to compensate the faithful operator for his painstaking operations.

This notable era in our profession on the Pacific Coast can be dated from the organization of the California State Dental Association. Why all this wondrous change, and whence the cause? Gentlemen, this is the result of *dental education*. Too much care and time can not be bestowed upon ourselves to properly understand our calling; for, as we possess the requisite ability to communicate our views to each other, so will we be able to educate the public to what is necessary for them to do to preserve the dental organs. Allow me to assure you, that the time so consumed is not lost; but is, like the seed that is sown, destined to bring forth fruit. To those who have been blessed with collegiate educations, it is hardly necessary to impress the importance of study. A professional man to-day can not hide his head in the sands of idleness without being found out. You must read, you must associate with your brethren in your specialty, in societies, or you will become a laggard in the race for professional preferment, and you will realize, when too late, that your life's labors have proved a failure.

Dental legislation will come up for your consideration. It behooves us to look at this subject calmly. There is no doubt that some State law could be passed that would be alike beneficial to the profession and a comparative safeguard to the public. As it is, the merest novice or bungler palms himself off on the public as a dentist, without having prepared himself by study or application any more than by having access to the laboratory for five or six months. The public need some protection against impostors who are constantly thrusting themselves forward. Your Committee on Dental Legislation, appointed at the last session, will no doubt present some law for your consideration.

The Essayists, and the various committees appointed at our last session, will no doubt present interesting papers, which will open the way to discussion, and I hope and expect that every member will feel at liberty to express his

views and take part in the discussion of the various subjects, to the end that each and every one of us may return to our usual avocation with renewed vigor, and that we may all reap the benefit of associated effort.

Collegiate education will come up for your consideration in this connection. It is proper that I express to you, at this annual convention, my views on the recent movements of the University of California toward the organization of a dental college—a subject of vast interest to the profession of this coast. It is evident to us all, that we need here on the Pacific Coast a school of instructions for those who would honestly qualify themselves for the practice of dentistry; a school where the science and the art, the theory and practice of dentistry, may be acquired, and the power of publishing to the world, as an authority to be respected, the proficiency of those who have been thoroughly taught, as by the giving of diplomas. It seems to me, that the action of the Board of Regents does not meet this want. It is evident that these sharp men of business, diligent and wholly devoted to money-making, have no qualifications for organizing a Dental College which the profession of the State could respect, judging by the hybrid School of Medicine and Dentistry, a small clique in the Board of Regents have been able to thrust upon the community as the organization of a Medical College of the University of California. With my knowledge of Dental Colleges, obtained by having regularly studied in one of the best on the continent, and by knowing the teachers in and the internal workings of several of the largest schools of dentistry, I venture to express the opinion, that a Dental College, to be thorough and successful, must have a complete corps of teachers, chosen for their special qualifications, their sterling integrity in the profession—men identified with the progressive spirit of the age, whose positions are such as to confer honor upon the institution with which they are associated, rather than have it confer honor upon them. The Dental College should not be a caudal appendage to a medical college, but an independent and complete organization within

itself, managed and controlled by dentists, who know its wants and destinies—profiting by certain of the lectures given in a medical college, if you please, for convenience, but free from association of the two faculties.

To give my views a practical, immediate use, I would recommend to you, gentlemen of the State Association, that you select eight from your members, who seem to you the best qualified for so important an office, and who are willing to take upon themselves such a responsibility, requesting them to organize from among themselves, as far as they can, a Dental College, affiliating with the University of California, or some other city organization, for the purpose of conferring the degree of Doctor of Dental Surgery; or, failing in such satisfactory affiliation, then asking the Legislature to confer the power on the College itself; and that you give such an organization all the support you can, individually and collectively, and that you yourselves, as far as it may be practicable for you and at your convenience, pass the examination of your College and seek its degree. The welfare of the profession and the progress of our art, it seems to me, demand of you that you take such action as I have here suggested.

Dr. Younger—I feel it incumbent upon me to state that the Dental College, as proposed by the Board of Regents, is not a "caudal appendage" to the Medical or any other school. It is a College, distinct in itself, having a faculty of its own.

The following was adopted:

Resolved, That all addresses, essays, and reports, read before and accepted by the Association, shall become the property of the Association, and be passed over to the Secretary immediately after their acceptance; unless permission be given for their withdrawal, by a majority vote.

Dr. J. B. Beers, of San Francisco, was regularly elected to membership.

Dr. Dennis, Chairman of Committee on Operative Dentistry, read the following report:

REPORT OF COMMITTEE ON OPERATIVE DENTISTRY.

Mr. President and Gentlemen: When I heard the names of my co-laborers upon this committee announced, I congratulated myself upon being associated with men better fitted than myself for the discharge of this important duty, and hoped I might be relieved of the responsibility and labor of taking any action on this report, and be permitted to be still and learn, instead of attempting to teach; but when a member once has the reputation of being active, he is expected to continue his work.

I shall submit to you what will have to pass as a Report on Operative Dentistry; it may be, as the first introduction of steam into the cylinder, which starts the silent body in motion; or, in other words, open the discussion.

I look upon the subject of operative dentistry as one of the most important branches of our profession. It embraces such a wide range, however, that it is no trifling matter to tell where to commence or leave off. It seems necessary to condense, rather than expand, our daily observations. I shall simply review the field which has already been traversed by others. Every member of our profession, who is worthy of public confidence and professional regard, has a keen eye and quick ear to every word written and spoken on this subject, that he may, by the light of investigation, penetrate the fog overhanging the breakers which are indications of dangers in the deep; and for this reason the task is a difficult one.

Volumes have been written and published under the title of "Operative Dentistry;" so, I might write upon the human teeth from conception till the chin and nose meet over the toothless chasm of modern civilization, and place it under the same caption; but I have no disposition to take the time nor tax your patience to listen to such a medley; so, I will endeavor to confine myself to a few practical points, some of which have been considered, and will be found in a paper

read by Dr. M. S. Dean before the Illinois State Society, last year. He gives his views ably and candidly, under the title of "Sound Practice, Sound Philosophy;" but I argue that some of it is neither sound philosophy nor sound practice. He has given expression to ideas in such happy accord with my own, and in language so well chosen, that I will adopt it as my own, and give it to you *verbatim*. He says:

"Our practice, as professional men, to be successful in its results, must be based upon sound philosophy; by this, I mean the knowledge of those principles and laws that govern the materials or agents with which we operate, and also those upon which we operate.

"Unless we understand these laws, our practice is simply initiative, or guess-work; unless we are familiar with these principles, we shall continually encounter difficulties, a better knowledge of which would lead us to easily avoid. Anatomy, physiology and pathology are of little avail in the practice of our profession, if we lack the essential principles of this branch of physical science.

"We must understand the properties and laws of the dead matter with which we deal, as well as those of the living. The principles of philosophy run through the whole gamut of our practice, even from the material and force of the mallet, up to the most obscure and difficult disease of the oval cavity."

Now, gentlemen, what is sound philosophy? It is the truth, science, or a knowledge of law, it matters not what law, whether mental, moral, physical, organic, or mechanical; and those who best understand these laws pertaining to our profession, are the best able to surmount the obstacles besetting our pathway. It requires the most delicate conception and use of language to draw the dividing-line between art and science, or knowledge, and they are in such happy unison in operative dentistry that one is of no avail without the other. Webster says, that science and art may be said to be investigations of truth, but science inquires for the sake

of knowledge, and art for the sake of production. And Pope says:

> "Good sense, which only is the gift of Heaven,
> And, though no science, fairly worth the seven."

And I say, if any practitioner of dentistry thinks he can operate by rule without observance of the mechanical laws of nature and the exercise of good sense, he is one of those unfortunate beings who, like dirt, is only matter out of place.

Let us consider for awhile the mallet. It is a very simple instrument, and it seems marvelous how much can be said on a matter that seems of so little importance. I think it was first used, or brought into notice, by Dr. Atkinson; but, as he says, this matters not. The great diversity of opinion upon the relative merit of heavy and light mallets shows conclusively the importance of considering carefully these apparently little matters, that perfect results may follow.

The first question is, Shall the mallet be used to aid us in filling teeth? I answer, Most assuredly.

While I admit that good work can be done without the mallet, or by old-style hand-pressure, I shall claim that better operations can be done with it; in other words, the operator who excels by hand-pressure would also excel by the use of the mallet, and thus carry his operations to a higher degree of perfection. The most thorough operator that I ever saw was Dr. Royal W. Varney, of New York. He used the hand-mallet and malleted for himself, which but few are able to do. I believe, every dentist who has had the honor to see him operate accords to him the glory and honor of having been the most polished operator in the nation.

He is no more:

> "While life was in its spring,
> Oh! what a noble heart was here undone,
> When Science' self destroyed her favorite son;
> Yes, she too much indulged thy fond pursuit—
> She sowed the seeds, but Death has reaped the fruit."

We will now take up another bone of contention.

Which is the superior, the heavy leaden, or the light wooden? I say the light wooden. I claim, that both theory and practice sustain me, and I will make use of Dr. Dean's theory, or argument, to justify me.

Now, gentlemen, with your kind indulgence, I will quote *verbatim* Dr. Dean's language on the mallet, in his article on "Sound Philosophy, Sound Practice;" also, his language in a discussion on the same subject and before the same society, the year previous.

He says: "I remember to have read somewhere a discussion in regard to the splitting of a bicuspid tooth in filling it on its grinding surface. From the tone of these remarks, the reader must believe that the prevalent idea was in this society, that the heavier the mallet, the more liable it would be to produce this fracture. Now, one familiar with the laws of impact would not need this lesson to teach him the fact, that the quick stroke of the light mallet would be much more liable to split this tooth than the heavier one, both having the same force of impact. We all recognize the fact that with the light steel, or wooden mallet, we can shiver to atoms a small glass ball that is tossed in the air, when with a six-ounce leaden mallet, we would propel the ball uninjured quite a distance. The heavy mallet may have the greatest momentum, yet the one which shivers the ball will have the greatest *vis viva*, or velocity."

Again he says: "If we have an extracted bicuspid which we want to split with the chisel, we should take our light, rather than our heavy mallet, to give the stroke. With this we should split the tooth without driving the roots into the pine table upon which it rests; but if we use the heavier, it will imbed the roots a considerable distance before the cleavage can be accomplished."

So you see, gentlemen, it seems to be settled, that the heavy leaden mallet jars the tooth and disturbs the head more than the light, because, while the light condenses merely the gold beneath the point of the plugger, the heavier effects the whole mass and drives the tooth before it; and I contend, the

former is what is desired and the latter to be avoided. He says: "Now, the fracture of a tooth is by no means the common result of a light, quick, blow of the mallet, but it is much more capable of producing the result than the heavier one." *This* may be an argument in favor of the heavy mallet, because the patient could not endure a blow with the heavy mallet sufficiently hard to split the tooth; but this appears to me anything but sound philosophy: that because fire, injudiciously used, will burn you to death, you must do without it and freeze to death; or, that because the velocity of a bullet is dangerous in offense, you should not use it in defense.

When Dr. Dean thinks he has the light mallet in the last agonies of death from his successive attacks, he all at once seems to become remorseful, and says: "Well, the light mallet has some good qualities, after all. In condensing the finishing layers of gold, the light mallet is the most efficient, especially if the last pellet be small, or if we use heavy gold; with it we can make the surface dense without affecting materially the mass of metal or the body of the filling." But here he begins to see signs of resuscitation in the light wooden mallet, and he thinks he will give it another blow and finish it, for fear it will get the best of him. "But," he says, "unless the tooth be a loose one, I should doubt the propriety of using the light mallet on the finishing surface in the majority of cases, as it is more unpleasant to the patient, and the heavier one can be made to accomplish the same result, though in doing so it effects the mass of gold more deeply."

On page 76, of Reports of 1870 of the same society, he says: "I would sometimes prefer the light mallet in incisors or loose teeth." Now, this does not seem to me sound philosophy; for, to me it seems, that whatever practice is sound for a frail or loose tooth, ought to hold good for a firm tooth, provided we regulate our blows to the size of the tooth and points, and the delicacy of the operation. If a man was about to drive a tack he would not use a sledge-hammer, nor drive a spike with a tack-hammer. It seems to me, the softer

and heavier the mallet, the more nearly you reduce the matter down to the old-style hand-pressure, which, in my opinion, no one will indorse who has given the light, elastic mallet a thorough, practical test.

In closing on this little instrument, I will say, that Dr. Dean's argument seems like a very able plea for a very bad client.

SMOOTH POINTS.

Smooth points I will consider in a few words. This matter seems to be with some a hobby, a false god. With them (smooth points), you must rely entirely, I may say, on the cohesion of the gold; while with slight serrations we obtain mechanical union, combined with all the cohesion you can gain with smooth points, and when these are coexisting a filling can be executed that is more perfect than it could be, possibly, with smooth points alone.

HEAVY GOLD.

Though it is, and will continue to be, misused and abused, it is one of the greatest auxiliaries in operative dentistry of our time. Thanks be to Professor Atkinson for it. If he was not (and I believe he was) the first to discover or use it, he *was* the first to call the general attention of the profession to its wonderful advantages, and *then* hundreds sprang up, phœnix-like, to *claim* priority, who had not the genius to discover its *merits*, nor the liberality or public spirit to make their discovery known, that others might profit by it. With some it seems to be the idea, that because a filling from it looks solid and shining, that is all that is necessary. Nothing, to my mind, in our profession, can be more fatal than a stuffing or filling from this heavy gold carelessly introduced. If a watchmaker should make a watch, or a machinist an engine, with the same careless indifference to mechanical law that some men manifest while using this material, would they ever go? Yes, the makers would, or ought to, into an insane asylum, while the watches and engines would go into crucible and furnace, as evidences of their insanity.

I think, in the use of heavy gold, we should not span much of the surface of the cavity at the margin of the gold, that it may not rock on the uneven surface of the cavity. I think the filling at the periphery, or walls of the cavity, should always be a trifle higher than at the center. Though I am fully aware that I am conflicting with some members of the profession who have the reputation of being fine operators. I do not believe, when a filling is properly inserted, that the gold draws from the walls, and when this is the case I look upon it as one of the best evidences of imperfect manipulation and misunderstanding of the means at our command. We should not strike unequal blows on the center and margin of fillings Dr. Dean has said in his paper, that all fillings are more or less porous. How far porosity may extend without danger, would be quite difficult to determine. But because, according to the atomic theory, that no two atoms or particles come in absolute contact, it is no reason that the matter of density of a filling should be so overlooked that the destructive agents of the oral cavity can be taken up by capillary attraction.

We see too many fillings looking blue, and too many patients feeling blue, to hold out any inducement or encouragement for carelessness. We know that those operators who are the most thorough in the matter of density, have the most patients to bless their memory and sound their praise, notwithstanding the expansion theory, which, to use a common street phrase, "is very thin."

Dr. Dean says, gold should not be forced, unwillingly, into any portion of a filling. It seems to me, that his method of making the filling convex, or higher in the center, provides exactly those places where the gold would have to be driven unwillingly; because, by this method, you form an angle whose sides are composed of different material, and to introduce the gold into the apex of that angle would be like driving a wooden wedge into wood, with one side greased and the other side glued; or in other words, if we attempt to fill this angle with cohesive gold, while it sticks or co-

heres to one side, it does not to the other, consequently works ugly or goes unwillingly. But he seeks to obviate this by soft gold and succeeds in a measure, though only in proportion to the difference in the cohesiveness of the gold already in the cavity and that being introduced. We shall argue, if the filling is carried along alike at the center and margin and with careful regard of the direction and the force applied, that there is nothing to fear from the gold's drawing from the walls of the tooth or from splitting the tooth, as we are liable to do by his system of wedging. The question may be asked, or arise, With which material the most teeth can be saved, with cohesive or non-cohesive gold? I should want to answer this question in the Yankee's way, by asking another, that is, Who is to use it? As to myself, I should, were I to be confined to one, take non-cohesive gold, though I think them some like the two sexes, though counterparts (quite unlike), there is a strong affinity, and when well matched and well handled, like man and wife, they produce good results. We should be watchful of the condition and shape of the cavity during our operations, and see that whatever gold may be used, that it is carried carefully and thoroughly home to every irregularity and depression. We ought to prepare our material with referenee to the size, shape and location of the cavity, and never tumble it in in a hap-hazard manner. It is quite common, and a bad practice, to carelessly double the corners of heavy foil against the walls of cavities and then beat it down to place. It is simply turning the mouth into a gold-beating establishment.

PREPARATION OF CAVITIES.

If a tooth is to be filed, file it all that is necessary before you fill it, and see that you leave no feathered edge to the orifice, otherwise the filling is pronounced well done with microscopical imperfections, if they are not visible to the unaided eye, and thus the foundation for its ruin still exists.

CONTOUR FILLINGS.

I think, our profession should have a higher ambition than to convert the human mouth into a show-case, where the patient can be better served and the tooth better preserved without it. It is a poor evidence of an operator's skill to build up a piece of shining gold in a front tooth. If operators would pay more attention to what are styled simple fillings in the obscured or back teeth, much good would be the result. If an operator fills a simple cavity indifferently he certainly fills a compound one in a like manner. You might as well expect an illiterate man to speak or write good English, as to expect an uneducated mind or an unskilled hand in operative dentistry to perform good operations in intricate cases, before they have acquired the knowledge and skill in performing good operations in simple cases. It is too frequently the case, that sound tooth substance on the labial or front portion of the tooth is cut away for convenience or to make the cavity accessible, while with a little more pains a V-shaped filing of the tooth, from the palatal side, the tooth would be better filled, better preserved with less labor, less expense and less display of the raw material.

RUBBER DAM.

I have said so much in praise of it, that I am afraid if I say much more, you will think I have rubber dam on the brain. To me, it stands like a monument on a hill, or shines like diamonds in gold, above every other surrounding object. It is the planet that governs the tide and commands it to go hence, that we may approach the wreck on the beach and repair the break in the hull, that the ship may continue to sail on its mission of usefulness. I will ascend or descend, as you please, from this poetic or sentimental strain, to a few practical considerations.

No dentist can make a thorough examination of dental caries without the aid of the rubber dam. Thousands of teeth are pronounced perfect, when the seeds of destruction are

lying concealed beneath the oral secretions. Dentists are sometimes charged with making holes in teeth, and whenever such an intimation is made to me of any dentist, I invariably tell that suspecting body, that for every hole that is made in a sound tooth, there are one hundred caries already existing that are overlooked. It often requires a great deal of moral courage to tell patients how many cavities there are in their teeth; but it is a duty we owe to our patients, and if every operator carefully discharged that duty, how much good would be done that is now left undone. Let us commence, from this date, to give all teeth confided to our care a careful examination, and inform our patients of their real condition; and then, if they are neglected, we throw the responsibility of their neglect upon them.

MECHANICAL APPLIANCES.

As we have no committee on mechanical appliances, and they come within the scope of this report, I may be expected to say something under this head. The profession has shown a wonderful lack of enterprise, at least, in this matter of dental instruments and appliances. Aman Green, not a member of the profession, invented the "Pneumatic Engine," which fell into the hands of Dr. Carpenter, of Chicago, and he, or both of them, thought, or appeared to think, that they had reached the pinnacle of perfection, or had a patent of the Patent Office, and that they would make the dentists "go down," whether there was anything there or not, and pay the price. But, out of this fact, grew the Morrison Engine, a better machine, and to be had for a little more than half the price of the other; and if I am a judge, its construction cost even more than the Green-Carpenter. The latter has one advantage over the former, that is, convenience, it being more compact and portable, or flexible, if I may use the phrase; but the former has more power and runs perfectly, without any noise. Gentlemen, I have them both, and have used them both for a long time, and have not published the fact, either; and am ready to state, without any qualifications,

that if I could have either at the same price, I should, without hesitancy, take the Morrison machine. At all events, I have one of Carpenter's for sale at a discount. You can not afford to do without one of them.

Mr. President, in conclusion, the only apology I have to offer for this report is, that it has been written in three evenings.

DISCUSSION.

Dr. C. C. Knowles—I think the report a most excellent thing. There may be room for a difference of opinion upon the views, as presented in regard to the method of impaction. It is a mooted, an unsettled question, whether a plug by the process of impaction should be kept raised at its edges, next to the wall of the cavity, or raised in the middle. For myself, I do not fill teeth upon the sole principle of impaction, under the mallet or hand-pressure, in the sense conveyed by that paper—that is, filling from the lower portions of the cavity to its surface. I am an advocate of the block or cylinder method of plugging teeth. My object for using that system is, to get rid of as many hypothetical breaks, angles or interstices, between the filling and the walls of the cavity, as possible. Impaction from the body of the cavity to its top involves so many liabilities to imperfection, that I do not use it except in some particular cases. Take, for instance, a compound cavity, upon one of the proximal surfaces of a molar tooth. It presents an open space at the proximal surface, bounded by the cervical wall, and the labial and lingual walls, a proportion of the crown of the tooth being good. The simple way to plug that tooth perfectly, is to plug it upon a principle that shall offer as few breaks as possible against the wall. I don't say, but what it may be impacted by the process referred to, and with a perfect cohesion of the gold the filling be made solid and durable, and well jointed against the wall; but it seems to me that the danger in that case is augmented by the frequent breaks that are necessarily caused by the introduction of masses of gold as

practised in all of these cases. My method of filling such a cavity would be to form two flat blocks; first folding a sheet, or a part of a sheet, of gold, in such a manner as to form a ribbon that shall be as wide as the cavity, and that cavity I shape with the view of getting rid of all angles or irregularities. Great care is necessary in the preparation of the cavity for using the gold in the manner in which I use it. I fold my sheet, or part of a sheet, of gold, into a ribbon, smoothly laying the folds of gold together without a wrinkle, so that it will occupy the least possible space, and so that the ribbon shall be as wide, or a little wider, than the cavity demands. I then fold it upon an instrument of greater or less width, according to the depth of the cavity from the crown toward the neck of the tooth; I fold that in a block that shall, by turning the lower edge of the block slightly, rest upon the angle or the turn in the angle, if I have an angle, which I wish to have if I can; and to one side of that cavity, lining one wall continuously from the cervical wall to the top or crown of the tooth, I hold that in position, and by a repeated course of pressure put it in place. I place another, of like form and magnitude, into the opposite wall By this method, I have then but one joint to fill and look out for. I have the two walls, the external and internal, the labial and lingual, completely lined. I then take another block, that is considerably after the same form as the first, and carry it down between the two already placed under the condenser, and I hammer it home, and then I am secure after that against any breakage of the walls, for I have secured the cervical and parallel walls. I then fill with blocks, first against one side and then the other, and then I fill with small blocks and condenser. Occasionally, after I put in two I condense, and then follow with two more and condense, until I have the cavity two thirds full, and I then place another small block, which shall lie against the one already placed, and another against the other side, lessening the space between the two walls as plugged. I would fill with adhesive gold, heavy foil, and if I have conducted that

operation through from beginning to end complete, I have finished that plug with less liability to failure from interruptions by joints and from creases in the gold, and I think I have got more metal into a given space than by any other method I can adopt. It finishes well, because you can throw down with the mallet the edges remaining, a portion of the side blocks, and cover them, if you choose, with the continuation, forming a T-shape of the heavy foil, and having here the finest surface, condense it down and finish it. I have then a filling that I think will stand all necessary violence to protect the tooth against all agencies that may tend to destroy it. That is the theory. I follow out the same theory with all classes of cavities, precisely. I don't know but it is true that impaction is the best method, but in my hands it has not given me the excellent results that, apparently, attach to the style of filling which I have adopted.

Dr. Dennis—I believe, if Dr. Knowles would devote one half or one fourth of the time to the new and more recent methods of filling teeth, that he has to the old way, I think he would look back on his own way with a sort of disgust, the same as he does now upon the matter of using napkins, instead of the rubber dam. It may be, that he finds that he can fill teeth quicker, and with less labor, and can make more money, in his old way.

Dr. C. C. Knowles—The consideration of saving time and making money never formed a part of my idea in operations at all. I base the system, upon which I operate, upon what I conceive to be purely a philosophical principle. I avoid, by my method, the possible imperfection of interstices between the walls of the cavity and the plug, by a continuous lining of folded metal. By my method, I can not be subject to more than two points of imperfection in the whole process of operation ; provided, I bring the gold, as I claim that I do, against the walls of the tooth perfectly. I have examined many of these plugs, that have been put in by impaction, under the microscope, and notwithstanding they appeared to

be continuous and homogeneous, there were interstices there that would alarm you if you should see them. And there is not one plug in twenty, that is put in, that will not, to a greater or less extent, under the microscope, show the imperfections of this impaction of one particle of gold upon another, somewhere in its connection, or in its proximity to the surfaces of the cavities. Practically, such plugs may be as good as those put in by the method which I advocate; but theoretically, I believe, and in many cases practically, they are not as good. My method looks to me to be the most philosophical and reasonable, and to offer the fewest reasons to anticipate failure.

Some of us have been guilty of making contour plugs, where we could not do any better. I contend against it, if we can get along without it. The process of impaction is there more largely brought to view. But always in those cases where the walls of the tooth are to be covered, I cover them with soft foil, and I do that by a continuous connection of covering. I always do it. If I could make an instrument by which I could introduce gold into the cavity in such a manner as to make one continuous line of covering for all the walls, together in one solid piece, I think I could make a more perfect operation than I now do. There are classes of cavities where we should use impaction altogether. A few weeks ago I had a tooth in which I was obliged to build on one side from the gum, and make a contour plug, having none of the wall left; and being obliged to depend for anchorage upon the use of golden screws. In such cases I must impact, and must depend upon that. In that case I covered the floor with continuous soft foil. In the operation of plugging the cavities of the proximal surfaces of the front teeth, I see no better way myself, in following out this system that I refer to. There is less liability to fracture, because you have your gold under better control by introducing it in parallel blocks, that are adapted to the purposes intended. I believe my operations will show that my fillings are condensed, that my gold is well impacted, and that they

are generally secure. But I propose to pay more attention to the formation of cavities than gentlemen do who depend upon the mallet and impaction; because, I must get rid of my irregularities, and allow my gold to face against the plain, even, well-prepared surface of the wall. I, perhaps, cut away more than gentlemen would, generally, in the use of gold by impaction. My greatest care, and that upon which I expend more energy than anything else, is in the proper preparation of the cavity; that is my greater anxiety.

Dr. Dennis—I claim, that as much of the tooth substance as can be left with safety it is our duty to leave. The more of the tooth substance you cut away, the more you cut off the vitality of the tooth, and *very soon after it becomes brittle.* When the tooth substance is cut away, the circulation is cut off and it becomes brittle. A live tooth, just taken from the jaw, you can drive into a board without breaking; but a tooth from which the circulation has been cut off for any length of time, if struck with a hammer, will fly into pieces. I think the necessity of cutting away so much tooth substance to "get rid of these irregularities," is an objection to the method of filling which Dr. Knowles advocates.

Dr. Younger—My custom of practice is, to adopt both or either one of these methods, as the case may suggest itself. I like Dr. Knowles' style, very much, indeed. I use the cylinders of Williams a great deal. They can be used either as soft or as hard foil. You can use them very soft, and by warming them you can give them any quality of adhesion that you wish. Since I have used Williams' foil I hardly use any of the heavy foils, because I find you can do better with it than with the heavy foils, and they will receive just as handsome a finish.

Dr. Birge—Wherever I can get the soft foil against the walls, I always prefer and use it.

Dr. Dutch—I think, that the most of operators who confine themselves to the impaction of gold, use the soft gold as

well as the cohesive. In fact, I think Dr. Dennis himself prepares what he calls blocks of soft gold that he uses against the wall of the tooth in certain places; and I think Dr. Knowles is in error, when he thinks these gentlemen fill from the bottom entirely; they approach the wall; they work to the wall all of the time: they do not work exclusively to the bottom. I am very particular in using my instruments, to drive to the wall all of the time, at the same time keeping my filling up in the center. I have examined a great many fillings where large blocks were used, and I used to use cylinders myself, and I always made it a rule to go to the bottom of such a cavity as that and make a floor before I commenced using my cylinder. My object was to present a surface as dense as possible, and at the same time to obtain solidity. Day before yesterday, a filling came under my observation that was formed of cylinders and heavy foil; it was solid on the top. There was one very little leak that passed around underneath; and when I cut that out to repair it on the buccal surface of that tooth, I found I could run an instrument under the filling, and that it was also decayed there. Therefore I say, it is necessary that we secure the foundation of our filling, and see that it has a good, solid foundation to stand upon.

Many gentlemen who claim to use the soft gold, stick it in the lamp, and they are then using the cohesive principle the moment they do that. I use heavy foils where I want to get strength and solidity to my fillings and where I want to tie fillings together. For instance, in the proximal surface of a bicuspid tooth, crossing the crown, I want to lock the two fillings together, and I tie them together with heavy foil. I think it makes it more secure than light foil; and I avoid as much as possible using my heavy foils against the margins. Frequently, when I am building in the crown of the tooth, I use along the margin of the cavity the light foil, and with the heavy foil on top of it drive that in: drive the heavy foil over the light gold. I don't think the gentleman will find these microscopic creases and angles in heavy foil that is

used, unless it is doubled up and rammed in carelessly, irrespective of how it is going. My object in using the light gold next to the walls of the cavity is, that it may be driven into every angle and irregularity. I have seen Dr. Varney perform operations. He used heavy foil, and was very particular never to fold any of his foil after commencing to put it in the cavity. If he wanted to use five or six thicknesses, it was folded up in a piece the shape he wanted for that place. I have seen him use thirty-two thicknesses of No. 20; but it was in a contour filling, after he was away from the wall. Generally, he used No. 6 against the wall, and then, as he got away from the wall, used the heavy gold; and in building up his contour filling, he would sometimes use twenty thicknesses, and would have them all assorted in his box before he went to work. His instruments were very small. In that operation I don't think he used but five or six instruments. An instrument five serrations in length, and I think, two serrations in width, was the largest instrument he used in putting that big filling in. The perfection of his fillings was due to the thoroughness with which he went over every layer that he introduced.

Dr. C. C. Knowles—I contend, that with equal care, dexterity and facilities for commencing and ending an operation, that my method offers less causes to fear failure than the other, because there is less to guard against; less to contend with. I have not to look after my foil in its connection with the walls, except at the point of junction at the bottom—at the cervical wall. There is my solicitude.

Dr. Dutch—I differ with Dr. Knowles in saying that his system involves the least danger. The danger, I claim, is in the force required to put that gold in position. The gold is placed in position, and nothing but the force of expansion of this gold that you put in the bottom abuts it against the wall. He depends upon the force he puts upon the gold to expand that, and consequently, you don't know the strength you are putting against the wall. This force is necessary to

hold it against the wall. In this way, he is breaking it continually by the force he applies to expand this gold that is striking against the wall.

Dr. Knowles—I hold, my method offers the only possible security against crushing a wall, and at the same time securing a perfect adaptation. Taking two pieces of foil, I place the first piece into place with light pressure until I have it where it will lay of itself, as a general thing; if not, I hold it with an instrument in the left hand until I get the other side placed. Then I put in the first key and lock it at the bottom, coaxing it up at the sides and at the middle, and then I use the principle of impaction; and I do not need any greater expansion than the gentleman claims by general impaction against the wall. I claim, that in this way I have secured the wall against the interruptions of metal, and then I use the same means in finishing the plug that he would use at first. I lay my gold against the already lined walls. I am not necessarily obliged to use external force; I need not be so careful to impact, for I have already covered the walls with gold.

Dr. Younger—Instead of lining both walls of the cavity at the same time, I place my first piece of soft foil against the angle, or if it is a very frail tooth, I carry it all the way, and then take a piece on the angle here to secure that, and hold it with the left hand, and keep on building up against that wall. Then I commence with the soft foil, warming it so as to bring out the adhesive property, and I build up this angle until I carry it to the top and to the center. By warming this foil, we make the soft foil already in the cavity adhesive and hard, and at the same time you have obtained the peculiar property of the soft foil of packing itself into the irregularities of the cavity, and when your cavity is done you have all hard foil. I use cylinders and pellets.

Dr. Dennis—Laborers, in packing loose earth, tread and beat down every shovelful solid, instead of waiting till the hole is filled with the loose earth. The same care should be

exercised and the same principle acted upon in filling teeth. For instance, take a sheet of foil, double it up six or eight times and roll it up, and suppose it fills two thirds of that cavity, and then another sheet of foil rolled up fills the other third. No power that we can insert here can bring that filling against the walls as firmly or as compact as if you had, say, four or five layers of soft foil there. You can condense soft pellets along the bottom of the cavity, and they will hold these side-pieces in place, and if thoroughly condensed you have something then for your anchorage. You can drive your cohesive foil into that soft foil. You can make fine indentations, and you can put fine points into it, and in that way get your retaining point, and then go on and build up in the center and fill in the sides; and it is not important if the thin piece on the side only comes about one third of the way. You can then condense your soft foil and put in another piece of soft foil nearly all of the way up. It makes a good filling.

Dr. McCowan—In removing some fillings, I have observed many irregularities and imperfections in the walls of cavities that I have taken particular pains to make smooth. There were little points that the gold did not reach. Noticing these imperfections in the adaptation of the filling to the walls, I was led to use the soft foil to some extent, as Dr. Knowles had before suggested to me. I have continually used it where it was practicable, and have been well satisfied with my success.

Discussion closed.

The President announced that Dr. Dennis would clinic at his office at 8:30 o'clock A. M. to-morrow; Dr. Knowles, at his office, 12:30 o'clock same day, and Dr. Knox, at his office, at 12:30 o'clock the day following.

Adjourned to 7 o'clock P. M.

EVENING SESSION.

Convened at 7:45 o'clock P.M., President Dutch in the chair.

Minutes of afternoon session read and approved.

Drs. J. B. Beers and W. H. Stanley, newly-elected members, were admitted.

Dr. S. E. Knowles, of the Committee on Dental Pathology and Surgery, read a paper entitled "The Pathology of Caries."

On motion, Dr. Knowles was granted permission to withdraw said paper after its discussion.

DISCUSSION.

Dr. C. C. Knowles—This thesis is suggestive, rather than demonstrative. Many points hinted at have been made matters of discussion among the learned of our profession. We are to look to the action of the vital force for an explanation of decay of caries. The specimens offered fully illustrate the position taken and demonstrates completely that there is the same effort about everything in the vital economy to circumscribe, encyst and heal, and it suggests to us for our investigation a field of information, at all events, to what is indicated in plugging teeth. I suppose, we all have had the notion that all that was necessary, in filling a tooth, was to prevent the action of external agencies upon the dentine. This explains why sometimes, in a long-filled tooth, the structure around the filling is more dense and the line well defined, showing that nature recognized the presence of the filling as an agent, and has, further to protect herself, thrown out the encysting line, and the tooth once thoroughly filled, is throughout its whole structure in a condition to resist decay better than before; and it shows that what we do in the protection of teeth is seconded in the efforts of nature. One question is, the absolute denial of vitality in the enamel. There are some questions that arise in relation to the molecular change in teeth vitalized and devitalized. Then I have a specimen showing a complete injection of hæmatin, wheth-

er broken-down blood, tissue, hæmatin, or whether the tubuli were of sufficient size to admit the passage of red globules, is a question that can not now be determined. I have heretofore supposed that it was due to a febral action resulting in the deposit of red globules of blood.

Dr. Younger—That explains the reason that teeth are sometimes sensible to heat and cold for months, but gradually, probably in two months, it wears away and then the application of heat or cold will not affect the teeth any more.

Dr. Knowles—In answer to Dr. Younger, I will state that where cavities penetrate sufficiently deep to make the teeth exceedingly sensitive, after being filled with some metallic substance, that the pulp canal is obliterated by the dentine till in from two months to a year it becomes insensible to heat and cold. I have examined teeth frequently, made sections of teeth filled in this way—teeth that have been worn down by long use, so that the grinding surface was almost completely gone, and the whole of the dentine, within perhaps a sixteenth of an inch of the free grinding surface, the tubuli were completely obliterated, and also a large portion of the pulp chamber.

Dr. Dennis—Do you take the position that there is no vitality in the enamel?

Dr. S. E. Knowles—Yes, sir.

Dr. Dennis—What is dental caries?

Dr. S. E. Knowles—Well, I believe dental caries to be true inflammation.

Dr. Dennis—Don't dental caries exist in the enamel?

Dr. S. E. Knowles—No, sir. The loss of the enamel is due to chemical solutions or abrasion.

Dr. Dennis—You say, dental caries is attended by inflammation?

Dr. S. E. Knowles—Yes, sir; I think it is.

Dr. Dennis—What is the difference between cavity and caries? Our authors teach us to express ourselves in this manner, that a cavity in the teeth should be called dental caries.

Dr. C. C. Knowles—I think, so far as a cavity is concerned, that caries is a misnomer.

Dr. Dennis—We express it as dental caries, whether the cavity is in the enamel or in the dentine.

Dr. C. C. Knowles—Certainly, some books don't make the distinction.

Dr. S. E. Knowles—One is chemical erosion of the enamel, and the other is chemical erosion of the vital tissue.

Dr. S. E. Knowles—I will state, that there certainly is a difference as to what portion of the tooth is attacked. We have caries below what was the neck of the tooth, or where the margins of the gums existed, and we find a corresponding thickening of the nerve canal directly opposite that point, as if when a vital structure is attacked nature understood and recognized it and proceeded to guard against it, by putting a layer of secondary dentine alongside of the nerve canal, thereby in a measure preserving the same distance that originally existed between the exterior of the tooth and the nerve. Where the enamel is attacked it don't appear to do so.

Dr. Dennis—Mr. President, it appears to me, that it is pretty hard to discriminate between caries in the enamel and caries in the dentine, only the dentine being more highly vascular, is acted upon more rapidly than the enamel.

Dr. Dutch—I think, it is a strong position to assume there is no vitality in the enamel. When you can see, from appearances, the whole surface of the enamel is discolored, undergoing decomposition, by filling we arrest the decay. It seems to me, enamel wouldn't be affected if there was no vitality. I have always been taught that everything about

the structure of the human frame has life, and when it has once become devitalized, nature makes an effort to remove it in some way. We cut all the diseased part away and fill with gold the tubuli close. Now, all this sensitiveness that we experience sometimes, after putting in a large filling, does not come direct from the pulp cavity; it is not because the cavity of decay is so near the pulp of the tooth; because, take a shallow cavity, and we find the most sensitive spot in the tooth (outside of the nerve) is the line of union between the dentine and the enamel. I believe that the tubuli transmit sensation from the pulp to the enamel, and that being the end of the tubuli, it is the most sentitive point.

Dr. S. E. Knowles—I think, I stated that these fibrillæ perform the functions of nerves, transmit sensation, and are most sensitive at their peripheral terminations. What we do is to remove the broken down portion and leave self-cleansing surfaces. If the enamel is partially decomposed, and the secretions are allowed to remain continually in contact with the spot, they certainly will produce erosion of the enamel. In case of surface caries of that kind, we clear away the broken down matter and polish and harden the enamel, making it as dense as possible, so as to resist any action from the outside.

Dr. Dutch—Most of you have noticed, where there is any nourishment we can see a difference in the color of the enamel, in its transparency not affected by filling. I hold, there is an anastomosing between the lacunæ of the enamel and the dentine; that the life is kept up in the enamel in that way.

Dr. S. E. Knowles—Microscopists have been totally unable to discover canals, and as far as anastomoses between the lacunæ and enamel is concerned, it is only in rare cases.

Dr. Knox—I think dentine is more able to resist chemical changes than enamel. I never made a test of it, but so it seems to me, as far as mechanical agents are concerned, enamel has the greater resistance; but with chemical agents, he greater the vitality the greater the resistance.

Dr. C. C. Knowles—I would ask Dr. Dutch, what life there is in the hair, nails, epithelium or skin. What part of the external surface of a man is there which possesses any sensation?

Dr. Dutch—I think the gentleman is entirely mistaken when he says there is no life in the hair. Prove it! Place a hair under the microscope, and you will see, very quickly, the tube and the surrounding sebaceous matter.

Dr. Winter—In filing the enamel of the tooth, it will frequently cause excruciating pain. If there is no vitality about that enamel, where does that pain come from? Another theory in which I don't agree with him. It has been established that the dentine is supplied with blood, and in some cases it has been discovered with white corpuscles instead of red, and I should disagree with him as to that point.

Dr. S. E. Knowles—Well, I should state that the average diameter of the tubuli is one ten-thousandth of an inch, and of the globule one thirty-five-hundredth. I don't see how a body three feet in diameter can pass through a space of one.

Dr. Winter—I will here state, that there is a great difference in the size of the dental tubuli, and you will find some teeth in which the dental tubuli are large and porous; consequently, such dentine is very subject to decay; decays much quicker than small dental tubuli in better dentine, and globules have been discovered in the dentine. I have some specimens.

Dr. S. E. Knowles—Did you ever see a tubule sufficiently large to admit a globule of blood of normal size?

Dr. Winter—It may not have been its normal size.

Dr. Menefee—I understood Dr. Knowles to say there was no vitality in the enamel. Perhaps there is not a gentleman present who has not had a case where the enamel from the front teeth, around to the cuspid, has been cut away by acid that has been deposited by the mucus of the mouth; that

has cut the enamel away and left the dentine exposed. I have myself filled teeth where the enamel was gone, leaving nothing but the dentine, completely exposed. You cut down and find the end of the tubuli very sensitive. You will find cases where the caries has attacked in small places in the enamel, and has decayed through. Until it reaches the dentine of the teeth we don't find any sensitiveness. The moment it gets through the enamel we find that the tooth is sensitive. We find that the tubuli goes up to the enamel; the moment we cut that we find sensitiveness. That argues very strongly that there is no sensitiveness in the enamel. In all the investigations I have made with the microscope, I can't find any tubuli large enough to admit any globule of blood. He said, I believe, it is 10 to 35, and it is impossible for 10 particles to go in where 5 should go. Where you touch the union between the dentine and the enamel, you find it is exceedingly sensitive, and transmits sensitiveness to the tubuli of the dentine.

Dr. Younger—As Dr. Menefee has remarked—I agree entirely with Dr. Knowles, in regard to the vitality of the enamel. Dr. Winter mentioned that in filling, long before you come to the dentine, you find sensitiveness in the enamel. I had a case several years ago, a young girl about 14 years of age; the enamel was perfect, and of the usual thickness on the cutting edge. That girl could not eat fruit; nothing hot or cold, nothing sweet or sour, without suffering pain equal to neuralgia. I examined the teeth carefully to find the cause; I tried every irritant. The case puzzled me very much. I requested her to go around to one or two of the leading dentists of our city. Some recommended the extraction of the nerve, others of the teeth. I happened to pass my finger over the edges, and found she quivered when I got it down to a spot about the two centrals, and I found there was a little horn of dentine that was exposed. I applied the chloride of zinc, off and on, three times, and from that time until this day she has suffered no more pain.

Dr. S. E. Knowles—There are only two points at which a tooth is liable to be sensitive, and that is where a horn of dentine, corresponding to a nerve, was abnormally developed. In such cases I thought it would be an excellent plan to apply the rubber dam near the neck, and after that we would know just where to look for the sensitive point.

Dr. C. C. Knowles—There is another point: whether there is a membrane in existence between the enamel and the dentine? It is contended, that the enamel is reticulated directly without intervention of the dentine. Others, that there is a membrane reflecting from the neck of the tooth, over the whole body of the tooth, and interposed between that body and the gum. I contend, theoretically, that such a membrane exists, and there are various reasons for which I come to such a conclusion. One is, necessity of there being some peripheral line of anastomosing of the vessels among themselves. In a tooth that had been exhibited to a moderate degree of heat I incidentally struck it, and the whole cap of enamel came off and exposed the dentine. There existed minute floccular bits, having the appearance of a torn membrane, which, in holding to the light, I could distinguish.

Dr. Younger—Dr. Knowles suggested putting a rubber band over a sensitive tooth, so that the chloride of zinc should not come in contact with the sensitive surfaces, and at the same time the rubber protects the soft parts from the action of the escharotic. This often reduces the sensibility; sometimes it fails.

Dr. Winter—I have tried chloride of zinc, and creasote, and a good many remedies, for sensitiveness around the neck of the tooth, and I agree with Dr. Knowles, that I found caustic more effective, and could apply it much easier, and I am highly in favor of caustic.

Dr. C. C. Knowles—One of the processes set up by inflammation is seen in what we call *dry rot* or caries, in which

action has been suspended, and the dentine exposed by the decay. The decay is arrested, and to all intents and purposes there is a cure by nature herself. It shows a tendency of nature to effect a cure, in cases she meets in proper conditions.

Dr. S. E. Knowles, in support of his views, submitted a number of microscopical specimens of the human teeth.

Discussion closed.

Dr. Bunnell announced that Professor Gilman would address the society, in accordance with our invitation, at 7:30 o'clock P. M. to-morrow.

RECEIPTS.

Annual Dues	$125 00
Admission Fees	40 00
Total	$165 00

Adjourned to 10 o'clock A. M. to-morrow.

SECOND DAY—MORNING SESSION.

Convened at 10:45 A. M., President Dutch in the chair.

Roll of officers called. All present except Vice President Harris, Corresponding Secretary Knox and Librarian Birge.

Minutes of yesterday evening session read and approved.

The Secretary read a letter from Vice President Harris, in which occurred the following, explanatory of his absence:

"It is impossible for me to attend the present session. A recent death in my family, together with continued and serious illness of other members of it, forbid me this great pleasure. I was prepared to meet you on the subjects assigned to me, especially on Anæsthetics, but the articles may not be the worse for being held over for another year. My kindest remembrance to you as individuals; and may your work as an Association be crowned with success."

On motion, the report of Dr. Dennis on Operative Dentistry was again taken up, each speaker illustrating his method of operating, on the blackboard.

DISCUSSION.

Dr. Menefee—Taking a buccal cavity in the lower left second molar, embracing a half or two thirds of the surface of the tooth—such a cavity as Dr. Dennis operated upon this morning—I use the rubber dam and prepare my cavity almost the same as he did, except in the back part of the cavity, instead of making retaining points I make retaining pits. I commence with adhesive foil and fill this retaining pit up to the buccal surface of the tooth. Thus I have, as it were, a peg stuck right into the tooth; and then I commence with the cylinder, and pack and fasten my cylinders in place as the staves of a barrel are fastened together. I drive each cylinder of soft foil to its place, on the inside, and condense it as I go around. In this way I have the walls of the cavity completely lined, and perhaps two thirds or three quarters of the cavity is filled by the time I get entirely round. Then I commence in the center and fill with adhesive foil from the bottom up to the surface, and finish it off. This method saves the necessity of holding it with the left hand.

Dr. Younger—Do you ever find a slight separation between the last cylinder, which completes the lining and the wall of the tooth?

Dr. Menefee—I press each cylinder toward the wall all the time; for the cavity being larger at its periphery, in pressing it down you press it to the wall. I hold each cylinder with the left hand as I proceed until I get around. Of course, the last piece you put in must be thrust in with some force, in order to hold the whole series of cylinders solid. It is on the principle of setting up staves of a barrel. When it is set up it is impossible to break it down.

Dr. Younger—I have tried that, and have so often found

there was a little break between the last cylinders and the wall that I have abandoned it.

Dr. Menefee—I build against the wall until the lining is complete, leaving the center unoccupied by gold, and then I fill the center. I hold the cylinders in place with an instrument in the left hand, holding each cylinder until I place the other on. In putting these cylinders in I use hand pressure, and then I take a mallet. I make a retaining pit at the back part of the cavity.

Dr. C. C. Knowles—In putting up a barrel, the staves are beveled corresponding to the periphery of the circle that is to be made by the barrel. But with cylinders they touch only at one point; there are just as many angles here upon the outer periphery of the barrel as you have round bodies put together in the position of staves. When you come to condense the body of the cylinder by direct force, there is a feather-edge which is less dense than the center of the filling. This feather-edge next to the wall of the cavity being less dense than the rest of the filling, presents just as many interstices as you have cylinders.

Dr. Menefee—I used the word cylinder; I should have said blocks. My blocks are prepared by rolling the gold over a flat broach. It is round on the edges and flat on the surface. You can take very soft cylinders and flatten them down, and it is almost impossible to see any interstices between them: the foil being so loosely rolled it presses into place.

Dr. C. C. Knowles—I acknowledge the expansion obviates the difficulty, but the intersticial points still exist, however small; though it may be perfectly impervious to moisture, and consequently interpose no practical difficulty.

Dr. Dutch—Dr. Knowles has said a good deal about theoretical objections. Theory is good; I recognize it; but practice—good, sound practice—is better than all the theory

you can bring forward. Another strong point has been these objectionable interstices in filling. That has been harped upon until I have almost got sick of it. Not that it is offensive, because I recognize every gentleman's right to his opinion. But let us see the result and practices; that demonstrates what we do. I have no plan; I adopt my practice to each particular case. Yet, he says, that after lining the walls of the cavity with soft foil, he forces the cylinder into the cavity, expanding the soft foil to fill all irregularities. I think, if he will take his microscope he will see a great number of microscopic interstices, caused by the fracture of the circumference of his gold, as he enlarges it by filling and forcing in the center.

While East, in an interview with Dr. Jack, speaking of a tooth like this exhibited by Dr. Knowles, he said: "I build that kind of a tooth up by the use of gutta-percha. I make a piece of strong vulcanite rubber to go around the tooth, and I adjust my rubber band and place that over the tooth. I have a wall, so to speak, to that tooth, and I use this wall to build against." After it is filled the crown is larger than the neck, and he takes a little saw and splits the vulcanite rubber, and it comes off.

Discussion closed.

During the discussion, Dr. Dutch read a letter from Dr. George H. Chance, of Salem, Oregon, in which he highly recommended the use of gold-pointed pluggers. Dr. Dutch also exhibited some of the points, and a piece of gold rolled out of a plug inserted with said points. The following paper also accompanied the letter:

GOLD POINTS FOR PLUGGERS.

BY GEORGE H. CHANCE, OF SALEM, OREGON.

[Paper read before the Oregon State Dental Society, March 29, 1873.]

The interest of the dental profession has from time to time been excited with the hope that some material might be

found to perform perfectly the mechanical part of filling teeth, without subjecting the operator to the vexatious delay and opprobrium of wasted fillings or imperfect work.

The nicety of the operation is by no means its hardest part. At every stage of the proceeding we occasionally find ourselves baffled by unseen and unsuspected agencies, and only after repeated trials do we eventually accomplish our end.

The glory of science is revealed when it adapts the means to the end, so that the anticipated result shall be certain of fulfillment. The beauty of scientific action is adaptation to every requirement and perfection of the combined result.

Various kinds of pluggers have found hearing as to their pretensions, and have been thoroughly tested in practice; yet, there remains the same difficulties to be overcome; the material used has been changed and modified, and theory after theory advanced and proved unsound. Through all this earnest, patient investigation, we must sometime be rewarded by the discovery of truth.

I respectfully offer for your consideration the topic of gold points for pluggers, believing from the experience I myself have had with them, that they will prove worthy of your careful study.

Solidity and durability are essentials to permanency in a filling, and we can better understand the position assumed by reference to the probable causes of a want of success. Solidity can only be obtained by perfect cohesion, and the laws of matter can not be forced into relatious which are unnatural. The law of cohesion requires that the substance has the power of uniting with itself—that is, the arrangement of the several particles shall be such as to blend in one common homogeneous mass; the density of the mass may be increased or diminished by antagonistic forces; the one tending to bring into closer proximity, and the other to keep distinct and separate. Mechanical force may, by pressure, reduce liquids to solids, and heat may vaporize the hardest substances.

The following are some of the principal sources of failure:

1. Too great density, leading to brittleness.
2. Imperfect cohesion, causing friability.
3. Chemical antagonism, preventing union.
4. Electrical condition, repelling particles.

These several positions it would be best to examine and show how the gold point is adapted to their need.

First—No more fatal delusion exists than, that in order to retain a filling it must be forced or pressed with a power that shall make it hard as a mill-stone. Gold has a definite degree of firmness, and beyond that, it can be intensified only by the introduction of foreign material, and what it thereby gains, it loses in malleability. Pressure unevenly distributed over the filling causes unequal cohesive relations, and tends to facilitate breakage. The gold point bears in its own composition, *the standard of hardness required*, and when its bending indicates that resistance equals force, we have the true amount of power to be employed.

Second—The cohesion, when defective under a given amount of force, only requires that the force be continued until the standard is reached.

Third—Chemical antagonism. Every dentist knows that steel pluggers having sharp serrated points while new, after a few months of usage become rounded, having lost their substance in some way; the missing particles must be mingled with the gold in the cavities filled by them; the destroying nature of a metallic union so liable to oxidation, need not be told.

Fourth—Electrical agency. Intangible as some may regard this hypothesis, from the occult nature of the fluid itself, yet none will deny, under certain conditions, its power to repel. Who can estimate the equality of electrical condition or its reverse between the operator and patient? How many times we have been made conscious of the workings of some subtle influence in operating, that at one time favors, and at another hinders, success in the same subject. If we

then use steel, the best conductor nature has given, may not this account for some of those obstinate resistances to even the most simple operations? Take, also, the variable atmospheric condition, and we unite the amounts each body is charged with, just at the point where we desire the least disturbance.

Now, I claim that gold, when properly alloyed, makes a point sufficiently hard for all practical purposes, even to the smallest size required in operating, and can be used with either mallet or hand pressure. If any wear occurs, we have a mingling of kindred materials, without any danger of loss of affinity.

It is never the means of transmitting unhealthy influences, and indicates, most certainly, the *degree of force required.*

It is not claimed that the finishing of the work can be done in any other than the usual way, but it is in the *substance*, not the *surface*, where we want freedom from extraneous material.

A letter was read from Dr. J. G. Hearn, of Yreka, in which he regretted his inability to attend our present session, as he "was very desirous of becoming a member. Had practised dentistry twenty years—was not perfect yet, and was not too old to learn."

The Corresponding Secretary read the following letter:

San Francisco, May 21st, 1873.

Dr. H. E. Knox, *Corresponding Secretary California State Dental Association:*

Dear Sir: I have the pleasure to acknowledge the receipt of your communication of yesterday, notifying me of my election as an honorary member of the California State Dental Association.

For this distinguished privilege and honor conferred upon me, I desire that you will bear my grateful thanks to the Association. Although I have passed the period of immediate usefulness and service, I still have a tenacious anxiety

for the welfare of the profession, and am proud to see its individual members held in the highest esteem by the communities in which they are serving.

Time and experience have demonstrated the fact that the principle of associating members of the profession together, where they can have a free interchange of views and opinions in regard to special cases, and even general operations, in their practice, will bring out various ideas and suggestions which are valuable to the members of the Association and beneficial to their patrons.

Hoping that wisdom and amity will continue to prevail in your councils, and your consultations be for the general good of all, and a wish for the perpetuity of your Association, I am, with great respect, truly yours,

O. D. MUNSON.

Dr. A. Cornwall, of Virginia City, Nevada, was regularly admitted to citizenship.

The following resolution was adopted, and the Corresponding Secretary instructed to have it inserted in the *Evening Bulletin* of to-day:

Resolved, That the Faculties of the Medical College of the Pacific, and of the Medical Department of the University of California, also all members of the medical profession of San Francisco, be and are hereby invited to be present during the delivery of Professor Gilman's address, this evening.

Dr. Birge read the following:

YOSEMITE ART GALLERY, May 20, 1873.

DR. BIRGE, *Librarian C. S. D. A.:*

DEAR SIR: You are requested to invite the members of your Association to sit for cabinet photographs, at Watkin's Yosemite Art Gallery, 22 and 26 Montgomery street, to be contributed to your library.

The invitation extends to all future members.

Very respectfully,

C. E. WATKINS.

Adjourned to 2 o'clock P. M.

S

AFTERNOON SESSION.

Convened at 3 P. M. President Dutch in the chair.
Minutes of morning session read and approved.

Dr. F. M. Hackett, of San Francisco, was elected to membership.

Dr. Younger, Chairman of the Committee on Dental Pathology and Surgery, read the following report:

REPORT ON DENTAL PATHOLOGY.

The diseases of the mouth and dental organs are now being so well defined, and becoming tractable to treatment, and the necessity of preserving these organs of our blood, so important to health, beauty and comfort, that the dentist who does not put forth every effort that skill and ingenuity can devise to render extraction unnecessary, is unworthy of his profession, and should be ostracised from our respect and society. I now beg leave to present a few cases, hoping that a consideration of them may be of service.

A gentleman came to me to have his teeth extracted. He had been recommended to this by his physician, and some of the best dentists, both here and in the Eastern States; yet his teeth were perfectly sound. Two of them only had been caried, and these were well filled. There was not a single devitalized tooth in his head. But his teeth were loose and painful; the gums had receded fully one half the length of the roots, and were swollen and spongy; pressure on them caused the exudation of yellowish pus from their margins, and there was intolerable *fœter* of the breath. The gentleman noticed the commencement of the disease fifteen years before; but, on application to the best authorities, he was told nothing could be done for them but extraction. He preferred to keep them as long as possible, and when he could bear them no longer he came to me. I passed some delicate hoe-shaped instruments up along the roots, as far as gentle pressure would carry them, and then holding the

teeth with the unoccupied hand to keep them from being pulled out, by gentle traction I disengaged black tartar, that had caused all the mischief, and which clung with considerable tenacity to the roots. I then scraped the caried edge of the alveolar process, pointed it with iodine, as also the gums, and prescribed an astringent wash. In one week he returned. Upon examination, I found, first, that the gums had resumed nearly a normal appearance; second, that the fearful *fœter* of the breath had almost disappeared; third, that there was but slight discharge of pus from a few of the teeth only; and, fourth, they were firmer in their sockets and less sensitive to pressure. I passed the hoes along the roots again, to assure myself that there was no more tartar remaining on them, and continued the treatment with iodine and the astringent wash. I further ordered him to press the gums with his fingers, commencing at a point over the roots as high as the attachment of the buccal muscles would let him, and pressing toward the crown of the tooth, but not over the margins. By this means, when I last saw him, he had reduced the exposed part of the root about two lines; he was discharged in six weeks, cured.

There was one case that puzzled me very much. The upper front teeth of a gentleman, including the canines and first bicuspids, were very sensitive to pressure, yet there was no tartar on the roots, the gums had not receded, and, with the exception of a slightly deeper hue, were normal in appearance; neither was there any caries of the teeth; yet, they were not as firm as they should have been, but their lack of firmness was not by any means remarkable. Counter-irritants and bleeding of the gums failed to give him any permanent relief, and it was not until a very serious nasal catarrh, with which the gentleman had been affected, had been cured, that the abnormal sensitiveness of the teeth disappeared, and they became again useful and comfortable organs. In this case the disease was not in the mouth at all, it was merely the extension of the irritation, caused by the catarrh, from the floor of the nose to the dome of the

sockets, and serves to show that when the dentist can not find the disease in the mouth, or dental organs proper, he must look beyond, to the contiguous parts. And this proves, that for a dentist to be thoroughly qualified to practise his profession, he should have a much more thorough medical training than is usually given him, or he thinks necessary. But I will pass on to other cases.

A Mr. D——, 22 years of age, from Acapulco, presented himself to me last November. The appearance of his face showed at once the ravages of a dental fistula. The history of his case was this: Six months previously, he was attacked with a severe throbbing pain, and great swelling, in the region of the angle of the left inferior maxilla. A quantity of pus gathered, which at last found exit, externally, by an opening in the cheek, a half inch over the notch of the facial artery. Being of a scorbutic diathesis, his physician treated him for scrofula, and it was not until the end of the six months, when the discharge continuing obstinate, and the patient getting no better, that he commenced to suspect a slightly decayed second molar as the cause of the mischief, and ordered him to San Francisco to consult a dentist. Upon an examination, I found the cause of the trouble to be nothing but a retained wisdom tooth, one of the posterior knobs of which had only pierced the gum. The anterior knobs had evidently, in the process of growth upward, caught in the neck of the second molar, while the roots were held in the angle of the maxilla. The face showed a great depression in the region of the fistulous opening and a prominent tumefaction immediately over it. I extracted the tooth, and in doing so brought out a great deal of very fœtid pus, full of broken-down particles of necrosed bone. On probing the wound made by the extraction, I was astonished at the great destruction that had occurred in the bony formation of the jaw. I do not think there was over half an inch in depth of healthy bone left in the angle. After scraping off the exposed surface of bone in the wound, and detaching little pieces that were sticking to the fleshy walls, and rinsing the part well

with water, I bathed the cavity with carbolic acid and iodine, and introduced a pleget of charpie, saturated with these agents, to the bottom of the excavation, to prevent the closing of the wound, and force the granulations to rise from the bottom. The discharge through the face ceased almost synchronously with the extraction of the tooth, and the part quickly healed up. I then advised rubbing and working the tissues of the depressed portion of the face, so as to thicken the integuments. And, in the course of a few weeks, I had the satisfaction of seeing the depressed portions fill out nearly to the condition of the opposite side of the face, the tumefactions subside, and the wound fill up with healthy granulations to within a quarter of an inch of the surface, when his stay here being no longer rendered necessary, he departed for his home in Mexico.

Another case is that of a lady, where, in consequence of the necrosis of a superior lateral, a destruction of bone had occurred, extending from the external surface of the superior maxilla to its palatal face, involving the antrum highmorianum. Bad as the tooth was, it yet acted as a tent-pole to the gum; and as its extraction would have produced a fearful deformity, that might defy the skill of a plate-worker to remedy, I set immediately to work to cure the root, and then, making a free crucial incision over the apex of the tooth, scraped off all extraneous and diseased matter. I then injected, as in the previous case, carbolic acid and iodine, and occasionally a strong solution of chlor. of zinc, and kept open the wound by a pleget of charpie. Finding a month ago that there was no pus discharged, and the appearance of the mouth was that of health, I caused the injection to be simply of water, three times a day, a little salt being occasionally added to the liquid. I believe that in the course of time all the destroyed space will be restored by healthy tissue.

In the case of a Mrs. B., I cured an obstinate root of ulceration that I had treated with failure by the usual methods, by applying, through the canal of the root, sulphuric acid, by means of a little cotton on a fine gold wire, and after the

acid had its effect, neutralizing it with liq. ammonia, applied likewise with cotton. Two applications had the desired effect, and now, at the end of eight months, I find the tooth, to all appearances, in as good condition as if it had never been guilty of an ulceration.

Three months ago a Mr. P. came to me with a highly sensitive first left superior molar. The attrition consequent on mastication had worn off the enamel over several points in the grinding surface, the internal or lingual root was exposed over one half of its length, by the recession of the gum in consequence of a disease of the alveolus, occasioned by the presence of tartar, and all these parts, that were denuded of enamel and of gum, were exquisitely sensitive, not only to cold and heat, but to contact with food and the air of respiration. The tooth had been suffering from this exalted sensibility for some time, and had become at last so painful as to be unendurable. The gentleman had already lost the central and the corresponding molar of the opposite side, from this same cause—the different dentists to whom he had applied knowing of no better cure than extraction. I applied the granulated chloride of zinc to the sensitive parts, allowing it to deliquesce with the moisture of the breath, in order to impress the parts with its full strength; but, notwithstanding the repeated applications of this salt, the tooth continued as sensitive as ever. I tried counter irritants, imagining the unusual sensibility due to internal irritation, but without the desired effect. At last, I drilled a cavity in the tooth, and put the arsenious application in common use. This was effectual. I then drilled further, devitalized the pulp, extracted it, and filled the tooth, which has been comfortable ever since; the only trouble now remaining being the diseased alveolus, mentioned before, and which is now about cured.

I hope at the next meeting to be able to report the successful termination of a case, that I have lately commenced treating, the particular interest of which is due to the vast-

ness of the lesion, it involving nearly the whole of the left superior maxillary and contiguous parts.

A freak of dentition has just come to my notice, showing the complete independence of the permanent from the deciduous teeth. A child that had never had the four superior temporary incisors, at the eighth year commenced cutting the corresponding permanent ones, and has them now in the proper place, well formed and regular.

W. J. Younger, M.D.

DISCUSSION.

Dr. Younger—I have a little daughter, three years old, who has no deciduous laterals on the upper side, and I have been trying to find a case where the diciduous teeth have been absent and the secondary teeth have developed themselves. I could find no well-authenticated case until, the other day, I learned of a young lady, fourteen years old, who had not had a tooth in the front part of her mouth until she was seven years of age, and then the secondary teeth came out well formed.

Dr. Dennis—I wish to repeat what I said last year in favor of coating the teeth with a solution of chloroform and gutta-percha, in all cases where the acid treatment is pursued. It is a perfect protection against the acid, which you can use with perfect impunity.

Dr. Roberts—I have tried it, and find it excellent.

Dr. Dutch—I have been using aromatic sulphuric acid in several cases, where iodine and such things seemed to fail, and the results have been perfectly satisfactory. I have sometimes been surprised at the wonderful change that has taken place after a single application. Often after cutting down on the tooth, and with great patience and perseverance removing the tartar, there is some little particle left there, and the gum will not come up to a healthy condition. I use the acid with a soft stick, protecting the tooth with bibulous

paper; or, I take a hypodremic syringe, with a platina tube which I can bend, and insert it as far as I can get it up to the root of the tooth, and make pressure in such a way as to get one or two drops only between the gum and tooth. I press the gum, and the acid rises to the margin of the gum and covers the surface desired. I hold it in that position a few minutes and then inject through another syringe a solution of bi-carbonate of soda, and in this way arrest the action of the acid. I have realized some very flattering results from the use of this acid, when iodine and other treatment had failed. Very frequently, in cases of abscess of the tooth, where there is a sinus, and quite a destruction of the alviola process, this must be got rid of. Where I fail in such cases by the use of iodine, I inject the aromatic sulphuric acid. Often the result of one application is wonderful.

Dr. C. C. Knowles—I would ask Dr. Younger if, in the first case treated by him the alveolar process had undergone absorption; and if so, if he thinks he succeeded in getting bony attachment?

Dr. Younger—More than one half of the alveolar process had undergone absorption. After treatment the tooth became firmer, and I think it very likely that the alveolus *might* reform in the gum, but I am very doubtful about it.

Dr. S. E. Knowles—I have a case of that kind on hand where the lower teeth are very loose, so I have to tie them with a ligature. I have cleaned the teeth perfectly, but they have started up from the alveolus, or the alveolars have undergone absorption; perhaps both. There is no direct connection between the gum and the tooth, for the perisamentum is entirely gone from the roots of the tooth, and the teeth are only held in place by the gum drawing around them.

Dr. C. C. Knowles—This disease I find is very prevalent here; tartar about the necks of the teeth, a tumified condition of the gums, which are congested and bleed easily, and

absorption of the alveolar process. I have not tried sulphuric acid in these cases, but shall do so. I have used strong solutions of chloride of zinc, of nitrate of silver, though I dislike it on account of its color. I have used iodine, and iodine in connection with creasote and carbolic acid—a stronger tincture of iodine than the officinal. I have succeeded in a great many cases in effecting a cure. The first and all-important step is to get rid of all and every particle of tartar with the utmost care. The drawing instrument used for this purpose is liable to get over, and does not clean the tartar so effectually, as the shoving or pushing motion. In the pushing motion, you are also assisted more by the sense of touch.

Dr. Sitchel—I have seen many cases of carious bones treated by the sulphate of copper, which is not so hurtful or destructive to the bone as the sulphuric acid.

Dr. Younger—I recommend the use of the aromatic sulphuric acid, after the tooth has been as thoroughly cleaned as possible by the instrument.

Dr. Menefee—Last year, before the association, I advocated the use of lactic acid for the same purpose, it having the advantage over the sulphuric acid, that while it readily attacks any carious bone, it will not attack the soft parts. The use of bibulous paper and other precautions, are therefore unnecessary in its use. I use it as strong as it can be made. The effect of this acid is to be arrested by the use of alkalies, the same as with sulphuric acid. It does not act upon living tissues.

Dr. Dennis—Is not the periosteum, which is covered by the tartar, destroyed, and is there any possibility of restoring it?

Dr. Younger—I believe, the periosteum is never reproduced. The periosteum may be gone from the diseased portion, but enough remains to sustain the vitality of the

tooth. A portion of the periosteum must remain, otherwise the bone will die and be thrown off, as all dead bones. If the periosteum is destroyed, it will be impossible to save the root. There may be tartar on the outside of the periosteum.

Dr. C. C. Knowles—I have never seen such a case. In taking off the tartar, I scrape the body of the bone clean.

Dr. Younger—I find living tissue covering the root of the tooth, where there is tartar. I speak knowingly, when I use the word periosteum. I am not speaking of pericementum. I remove the tartar, without removing the periosteum from the root of the tooth, just as I would remove the dirt from my hand, without removing the skin from the bone. It would require a very sharp instrument to remove the skin from the bone. I use a blunt instrument, which I make with a half-round file. I file it flat and notch it slightly. It will catch anything that is extraneous to the tooth.

Dr. C. C. Knowles—The periosteum, being a vascular tissue, by which connection is made between the hard and soft tissues, and the hard tissues receiving nourishment from this membrane, which lines the socket of, and invests the root of, the tooth in the healthy state, while absorption of this membrane takes place, there is a corresponding absorption, to a greater or less extent, of the bone contiguous to, and in connection with, the pericemental membrane, tartar is deposited. It is a residuum, if you please, that is deposited by precipitation. I can not conceive, how tartar can exist in that position, with the pericemental membranes intact. There never can be any attachment after the tartar has been removed.

Dr. Menefee—We all know, that tartar is never deposited upon living tissue.

Dr. C. C. Knowles—I think, tartar is never deposited until the periosteum is removed; that it is never deposited

upon a living or soft tissue. The tooth may be very loose in the socket, and yet the cementum, or dentine, be still alive. There appears to be a double provision for the support of the tooth; the periosteum in the alveolus, and the tissue that occupies its center—the nerves and ganglion. The tooth may live, supported by one or the other.

Dr. Younger—That is contrary to my theory of the case. I claim, it is not possible for the tooth to live without its periosteum or pericementum.

Dr. Winter—I have tried to restore periosteum, but have never succeeded. I find, where the tartar exists the periosteum is dead. In the treatment of abscesses, caused by deceased teeth, I find sulphuric acid to be most effective. It should be applied in very small quantities, and with great care.

Dr. Bunnell—I believe, it is absolutely impossible to remove the tartar to the apex of the tooth, and afterward restore its firm connection with its soft tissues. Remove the tartar, and you have no periosteum under it. The tooth being perfectly clean, the contiguous tissues become firmer in their structure and help to retain the tooth in place, and there is a contraction of the gums around the tooth. I believe that is all that gives firmness to the tooth in its position.

Dr. Roberts—Here is a tooth and a portion of the superior maxillary palatine process from the nasal antrum. It was necrosed and detached before it was removed. The patient was not syphilitic. In the apex of the root of this tooth you will find a piece of steel imbedded. The tooth was filled six years ago, and in the clearing of it, preparatory to filling it, the probe having passed through into the foramen, its point was broken off and remained. The cavities of both the two centrals were filled. The patient experienced no inconvenience from this until four months ago, when a livid, inflamed appearance commenced below

the eye and extended down. About two months ago the bone was exfoliated and extracted.

Dr. Prather—About two years ago I filled a lateral incisor after having destroyed the nerve. Three or four days afterward the patient came to me with great swelling of the gums and intense pain. I did not think topical applications would reach it in time, and I took a hatchet-shaped excavator, cut right through the gum and alveolus to the apex of the tooth, and injected it with iodine and carbolic acid. This was a perfect cure. I have treated other cases in the same way, with the same result.

Dr. Younger—I had a case similar to that. There was an angry, swollen, black look about the gum, and I knew opening into the nerve would not relieve him, and I cut down through the gum and alveolar process in each of the teeth that caused the trouble, and I injected iodine and carbolic acid, and kept the part open, and in four days I filled the teeth up, and in a week they were all right.

Dr. C. C. Knowles—I am glad to see that the heroic treatment which I advocated two years ago in regard to the use of the scalpel has been adopted by the leading members of the profession.

Dr. Dutch—I also advocated the heroic treatment *two* years ago.

Dr. Roberts exhibited a piece of necrosed maxillary bone, presented to him by Dr. Lane, of San Francisco.

Discussion closed.

Dr. Younger made the following statement: I regret to learn that Professor Gilman feels offended at the remarks made by our President in reference to the Board of Regents, which were published in the *Alta*, and on account of it that he has declined to address us this evening. As they were merely the individual expressions of the Presi-

dent, and were not binding upon the Association, I hope a proper resolution will be presented, to show to Professor Gilman that no offense was intended him or the Regents.

Dr. C. C. Knowles—I consider that Professor Gilman has taken a wrong view of the affair. There was no offense intended, as could be seen by the fact that the Association had extended to him a unanimous invitation to deliver an address. I therefore offer the following:

WHEREAS, We, as an Association, anxiously wish to listen to an address, and repudiate all intention of taking any action that shall reflect in any way upon Professor Gilman, or any friends of our profession; therefore, be it

Resolved, That we most cordially re-invite Professor Gilman to address this Association as per agreement.

The former Committee of Invitation was instructed to present the above resolution to Professor Gilman and make such explanations as might be deemed necessary.

Adjourned until 7 o'clock P. M.

SECOND DAY—EVENING SESSION.

Convened at 7:45 P. M. President Dutch in the chair.

Reading of minutes deferred until after the delivery of Professor Gilman's address.

Dr. Dutch—Gentlemen of the California State Dental Association: With pleasure, I introduce to you Professor Gilman, President of the University of California, who will address you on the subject of The Formation of a Dental College.

ADDRESS OF PROFESSOR GILMAN.

Mr. President and Gentlemen: The University of California has undertaken a work of lasting worth to the people of this State—a work which time only can perfect, but which requires at the present moment the patience, the encouragement, the counsel and the support of every lover

of truth and progress. It is an institution of learning, established by the State, on foundations which were laid by private devotions in the days of Argonauts, who believed in the wisdom which is better than gold. It has been endowed by the National Government with a munificent land-grant, not yet converted into income; it has received from the State of California generous appropriations and a comprehensive charter; it has inherited a magnificent site at Berkeley, on which new buildings are now going up; it begins to gather in the rich harvest of endowments from men of wealth, kinsmen in nobility of action to the great benefactors of the older Colleges in the East; it is administered in its finances and its external affairs by an unpaid Board of Regents, in which the chief executive officers of the State, the Bench, the Bar, the Pulpit, the Lancet, the Farm, the Bank, the Manufactory and the Warehouse, are all represented; a body of men who are striving with a devotion and a persistence which to me, a stranger among you, appear as admirable as they are surprising.

The object of this institution is as simple as its agencies are varied. It is designed to promote the efficiency of every branch of liberal culture, to support and encourage and train young men to enter the three historic professions, and with equal earnestness to fit them for the innumerable modern professions which Science and Art have evolved in our day. It is a University of the nineteenth century, open without money and without price to students of every State and country. Such a University, on so broad a plan, with such great possibilities and such positive hopes, can not be built up in a day; nor can it expect to be any more fortunate than its counterparts elsewhere, in avoiding every mistake, or in conciliating everybody. But, if it shows a steady devotion to truth, a quick appreciation of the needs of California, a liberal recognition of the claims of the modern sciences and arts, and a determination to help on general and professional culture, is there one among you—is there any citizen of California, is there any patriot or scholar, who will not say "Godspeed?"

There has been a growing demand in this State for the organization of the under-graduates into departments of the institution, into literary and scientific classes, which are supposed to form a general education, available alike to those who enter upon this or that calling. Some three or four years have passed since this demand was made, and we have now pursuing courses of instruction somewhat more than 180 students, all of them looking forward to some higher usefulness in the community. The whole subject of professional training, the training for the law and the practice of medicine and surgery, and other higher departments of scientific investigation, have been postponed by the Regents, as I think, very wisely, until they could build up this under-graduate class; until they could train up numbers of young men fitted to pursue these higher callings. But, all at once, before the authorities had begun to mature these plans for such culture, their attention was unexpectedly called to the subject of medical education by the most generous gift of a commodious building, with the land upon which it stands and the collections which it contains, which was presented to the University without a condition of any sort whatever, but with a simple, vague and general understanding that it, or such funds as should arise from its sale, if the property was ever sold, should be devoted to medical education. This at once brought the subject before the Board of Regents, and, acting with a haste which I think you will bear me out in saying was truly Californian—with a desire to act quickly, promptly and vigorously, even at the risk of not being able to do just that which would be most satisfactory to themselves, they determined to make use of this building at once and organize in it a medical department. They invited to be Professors in that department most of those who were engaged in the two schools of medicine in this city. A portion of those gentlemen were too strongly attached to their former organization to feel warranted in entering upon this new calling. This was very much regretted by the authorities of the University; but they have not been daunted in going

forward, and are still hoping that others, if not those originally planned, will come in to help mature, strengthen and build up a medical faculty which shall be well worthy of the State.

In organizing a medical faculty, it was thought very desirable that the branches of dentistry and pharmacy should in some form or other be represented, also, and that certain gentlemen should be appointed to fill certain chairs of dentistry, which were named; and measures were taken to enlist the co-operation of those devoted to the study of pharmacy, through the California College of pharmacy, in order that they, also, might be included in this plan. Arrangements for this plan of concentration, in which all of these three separate professions would be intimately blended, by the organization thus projected, I know that, in my own mind, and I presume in the minds of others, there was some such thought as this: We have, for example, a scientific department, and we divide it up in accordance with the manifold specialties of modern days. For example, while we have certain general studies of scientific subjects, we have a department especially organized for those who are to be students, or teachers, in civil engineering; another special course for geologists and naturalists; another special course for chemists, and another special course for those who are to be agriculturists; and another special course for those who are to be miners; so, while there is a comprehensive department of science, there are these subdivisions of knowledge, each distinctly and definitely recognized, each having its especial instructors, each having its especial course of study. In the same way, the college has two great subdivisions—the department of letters and the department of science. As it is in the department of science, so it is in the literary. There is one class of students and teachers who are especially devoted to classical studies; there is another class of students and teachers, who are devoted to modern history—all of these classes and departments co-operative. There is no interference on the part of one with the work of another; there is no

clashing between the various interests of both, but a mutual co-operation. So, I suppose as the department representing medicine and surgery and pharmacy shall be developed, there will be no less than three sections: There will be a department of medicine and surgery, leading to the degree of Doctor of Medicine; there will be a department of dentistry, leading to the degree of Doctor of Dental Surgery; there will be a department of pharmacy, leading to the degree of Graduate in Pharmacy, unless some more suitable title should be devised for it. Though I must be allowed to say, that I am speaking for myself, and not by any formal authority; but I suppose, in these three specialties there will be many departments in which they can help one another. I suppose, elementary chemistry is the same to everybody, whether a civil engineer or a physician. There are applications of chemistry to metallurgy and mining, which are very different from the applications of chemistry to physiology; but the elementary rule is the same. So, without extending the matter, I believe that in many other chairs the union of persons interested in education and desirous of helping forward the various branches of professional science, and determined to help to elevate the community to a higher idea of education, will co-operate with one another. I should be very glad, for one, if in the further operations of the Dental School we might rely upon the co-operation and help of this body. Certainly, gentlemen who have given all their lives to so humane and so serviceable a branch of science as you have, can be of the greatest service in aiding to forward such an organization. If my own individual preferences were consulted, I should be very glad to see whatever chairs are to be filled and lecturers appointed, designated by commissioners from the State society and Board of Regents, either by means of a joint nominating commission, or by means of a nomination on the part of one body and a confirmation on the part of the other; or, by any other fair method of adjusting those very delicate relations which must always exist between the teachers of the university and the trustees; between

those who are interested chiefly in its scientific, its professional, its educational work, and those who are chiefly interested in its external affairs. I don't know exactly how this can be brought about; but a great deal depends upon your own disposition, and I think I am perfectly safe in saying, in behalf of the Board of Regents—certainly I express my own sentiments, without reserve, when I declare it is exceedingly desirable that there should be a co-operation between this society and the Board of Regents, in their attempts to maintain a School of Dentistry; and beyond that, in the working out of the details those gentlemen who have already been invited to co-operate with us and the authorities of the University, holding the position of Regents, will rejoice at suggestions, and help and counsel, from the members of this society. I feel as if in this, as in multitudes of other things, if we are disunited, we are weak; if we are combined, we are strong. As I look at California and San Francisco; as I study the various elements and forces, and their working in this community, as I have, almost uninterruptedly, for the last three or four months, it does seem to me you are ripe now for anything; that the thing which is wanted is not party separation and detraction, but it is combination for high and good results. I believe that you have, as a State, as a community, accomplished wonderful things in the last twenty years. As I become acquainted with one body and another, representing the culture and learning and prefessional skill of the State, I am amazed to see what has been accomplished here within so short a time, and how faithfully and effectively you are working. It seems to me, you should all hail with joy the fact that the national Government, and the State of California and private generosity, have come forward to build up a University, which is not to be managed by any sect, profession or class, but is for all callings and all citizens. And if we can only be patient with one another, and only be forbearing, and make haste slowly, we shall see, as years go on, an institution growing up, which not only advances each particular profession, but adds a great

deal to the culture and civilization of the whole community.

It would be quite unwise for me to take up a great deal of your valuable time. I was a little alarmed by the very formal notice which I saw in the paper, inviting members of the medical profession, and so forth. I can assure you, I have always dreaded meeting a single gentleman of your profession, and I dreaded much more coming into the hands of thirty or forty. But I hope, from the reception you have given me, I may be able to report that we are united in this undertaking, and that we shall be found co-operating in the interests of science and humanity.

Dr. Dutch—I feel somewhat embarrassed in the position in which I find myself. Perhaps some things and events that have occurred within the last two months may be explained. As President of the California State Dental Association, I think since the organization of this Association we have come together with one fixed purpose; we have worked as a unit in one direction, and that is toward the elevation and progress of our profession; and to-day I feel proud to say that our work is progressing rapidly. There is a marked improvement in every professional man connected with the Association from its commencement. The reason why there has been such a feeling in the Association, apparently antagonistic to what has been done by the University of California, is the utter disregard on the part of the authorities of the University of the feelings of the Association; that they have not consulted in any one step they have taken what the profession at large required in the formation of a Dental College. The action was hasty; in fact, I may say, it was secretive. The first knowledge we had of it burst upon us through the announcement in the papers. All the Association knows regarding what the Regents of the University have done, is merely what they have learned through the columns of a newspaper. I believe, and it seems to me it is a general impression in the Association, that there has not been a proper amount

of respect paid to the profession. There is where the antagonistic feeling lies. I may be wrong, and the Regents may be right. They may go on and ignore this Association, and establish a College; but I hold that a College, to be effective, must have the indorsement of the profession. I am satisfied that every gentleman connected with the Association would only be too happy to see the establishment of a Dental College. I will not say anything more regarding the feeling of the Association, as they are at liberty to express it by some action at some of their future meetings, and I hope they will do so, and that Professor Gilman or the Regents, may be informed of their action.

Professor Gilman—Mr. President, with your permission I will retire.

Minutes of afternoon session read and approved.

On motion, the regular order of business was suspended, to hear the report of the Barnum Testimonial Committee.

REPORT OF BARNUM TESTIMONIAL COMMITTEE.

Mr. President and Gentlemen of the California State Dental Association: During the session of the American Dental Association at Nashville, Tennessee, a motion was made to take some steps to reward Dr. S. C. Barnum, in some manner, for his fine and valuable gift, the Rubber Dam, to the dental profession.

I thought I might be expected to say something for California, and so I stated to that body that I thought if it was the design to make it national, it was premature; that unless a thing was understood it could not be appreciated, and I knew but few in California had any practical knowledge of it. But when it was understood, the profession in California would be heard from in a manner in keeping with California's reputation for acts of generosity and philanthropy, and that what I might do toward it I would like to do in conjunction with my professional brethren at home.

I have received several letters from testimonial committees at the East, soliciting means to aid them in enterprises of this character, but I informed them that we would most likely act independently, and thus the matter rested, until I found they would think us a poor, non-appreciative limb of the profession.

Two years ago, I introduced a resolution, similar to the one now before this body, but it was lost perhaps because *it* was premature; that members had not had time to investigate the real merits of this noble gift. "Every cloud has a silver lining." I repeated the resolution last year, and it was adopted, showing the growing sentiment in favor of its use.

Your committee, appointed last year to execute the sentiment of this resolution has assumed the responsibility of securing a medal, to be submitted to you now for your approval, that you may see at once for what you are spending your money. It is a little, paltry gift—to the magnitude of Dr. Barnum's free donation of the rubber dam to us. There is not a dentist in the nation who understands the use of it (and it is his own fault if he does not), and cares for his own reputation and the well-being of his patients, who would not willingly give more every year for the use of it than he will have an opportunity of giving this year for a life-long lease of it. Notwithstanding the inventor had a fortune within his reach, he said: "No, I will not take it; I can do more good by giving it to the world." And now, as servants of the people, we are anxious in part to express our gratitude to this public benefactor, by this little gift. I have said it is a paltry gift, yet it is a beautiful thing that he will never be ashamed of. Let him wear it whenever he may, it will reflect credit on the California State Dental Association.

This committee was appointed to devise ways and means to secure this testimonial. It has devised the ways, but it has decided to let you devise the means. The committee believes that each and every member of this society will not only be willing, but anxious, to share alike in the

expense and honor of this memento, rather than to have a paper accompany it, bearing unequal contributions. The medal has been designed and executed with great care, by San Francisco's best artists, and at an expense of $500, which is a very little above the cost.

Now, Mr. President, and fellow-members, here is the prize, and, as I have said before, we will leave the question of means to you.

S. W. Dennis,
J. N. Myers,
Jos. J. Menefee,
H. Austin,
C. C. Knowles,
Wm. Dutch.
} Committee.

DESCRIPTION OF THE MEDAL.

Dr. Dutch—On the face of this medal is a monogram set in diamonds, forty-eight in all. The initials are S. C. B. The medal is surrounded by a wreath representing a laurel wreath; the whole surrounded by a grizzly bear, the emblem of the State. The pin is composed of nine different pieces or varieties of quartz, lapped off. On the reverse side is the inscription: "Presented to S. C. Barnum, D.D.S., by the California State Dental Association, as a mark of esteem for the liberal contribution of his great invention, the Rubber Dam, May 22d, 1873." The weight of the medal is six ounces.

On motion, an assessment of ten dollars was levied on each member of the Association to pay for said testimonial.

The Committee stated that the actual cost of the testimonial was "four hundred and twelve dollars."

It appearing, that the motion levying an assessment of ten dollars was unsatisfactory to the mover and others, they preferring that "members be requested to donate ten dollars each," the motion was reconsidered and indefinitely postponed.

The members present stepped forward and contributed three hundred and thirty-five dollars.

Dr. Menefee offered the following resolution, which was adopted:

Resolved, That the medal procured by this Association as a testimonial to Dr. S. C. Barnum be, by the committee, sent to Dr. P. G. C. Hunt, President of the American Dental Association, with the request that he present the same, on behalf of our Association, to Dr. Barnum, with appropriate remarks, at the next meeting of that association.

The following reports were received from the Committee on Mechanical Dentistry:

REPORT OF COMMITTEE ON MECHANICAL DENTISTRY.

To the California State Dental Association—GENTLEMEN: Your Committee on Mechanical Dentistry begs to submit the following report:

There has not been anything new in mechanical dentistry, as applied to the art of inserting artificial dentures, within the last year. Your Committee can, therefore, only give their experience and opinion upon the different methods and materials, with which you are all no doubt familiar. We feel that in doing this we are encroaching upon your time, which, perhaps you will think, could be applied to better use.

Continuous gum and gold is no doubt very far superior in most cases for bases for artificial dentures to any other material yet introduced to the notice of the profession; but owing no doubt to the time, skill and labor required in its manufacture is comparatively but little in use. Some "old fogies" are still content touse it, not keeping pace with the times, andcontentedly thinking they are making the best work extant. Vulcanized rubber is still the "rage" with most dentists, and consequently most patients, not so much for its excellence as for the ease with which it can be manufactured, and the low price for which it can be furnished to the patient.

Aluminum, properly manipulated, is no doubt far superior to rubber or any of the cheap materials now in use for

this purpose, but is very little in use, owing no doubt to the time and labor required in its manufacture.

The celluloid base is claimed by its inventors and manufacturers to be superior to rubber or any other cheap material. We can not at this time give an intelligent opinion in regard to this "new base," not having had sufficient experience in its use; but from the testimony of some reputed good mechanical dentists, it is a good substitute for the better-known cheap material. We think, if it is even as good as rubber for this purpose, it is the duty as well as the privilege of every mechanical dentist burthened with the mill-stone "Josiah Bacon" to try it, and if successful, use it to the exclusion entirely of rubber.

There seems to be a disposition on the part of good operators to ignore the mechanical (so-called) part of the profession. This, we think, is the reason mechanical dentistry does not progress more rapidly; for although we have attained a high degree of excellence, yet there is room for improvement in this department as well as the operative.

We deprecate the disposition of some "First-class Operators" to pay no attention to this very beautiful and useful part of our profession, not only because it detracts, as already hinted, from the advancement of the art, but that it is wearing on the health and energy of the profession, or rather individual members thereof. If we would leave the operating chair occasionally and go into the laboratory, and labor as earnestly at the production of first-class artificial dentures as we do to the production of first-class filling, we would not only advance the profession but promote our health, which we too often entirely overlook in the eager enthusiasm for our adopted profession.

We do not wonder at the advertisements frequently noticed in the journals of the day, viz: "Artificial teeth, full sets five dollars, and partial ones in proportion. First-class gold fillings, one dollar. All other operations in protion." "Proportion!" seems to be the order of the day. We say, we do not wonder at such disgraceful advertise-

ments when we think that some of our best educated and most successful dentists utterly refuse to perform the operation themselves, even for a remunerative fee, but turn them over by such refusal to just such charlatans as would issue such a disgraceful advertisement.

J. J. MENEFEE,
GEO. MCCOWEN,
LOUIS BUSH,
} Committee.

Dr. McCowen gave notice, that he would on to-morrow make an individual report on Mechanical Dentistry.

Dr. Bush, of same committee, then made the following report on same subject:

DR. BUSH'S REPORT ON MECHANICAL DENTISTRY.

Mr. President and Gentlemen: So much has already been said upon the art of Mechanical Dentistry, by men in our profession far more capable than I am that it seems superfluous for me to say anything. I will give my experience in my own practice—rubber *vs.* gold. Formerly I was opposed to rubber, feeling, that in many cases it was unhealthy: but since that time I have changed my opinion in regard to it. This last year I had a patient who wore a set of teeth on good gold plate; the plate fitted badly, and the mouth was in a much worse condition than any mouth I had ever seen where a rubber plate had been worn the same length of time. I have found this to be the case in nearly all cases that have come under my observation where rubber was worn for some time, and irritation and ulceration had made its appearance, that it came entirely from the plate not fitting well. I advised the patient to leave the plate out for several days, until the mouth was in a healthy condition, then took an impression and made a perfect-fitting plate, which has been worn with as much comfort as the best fitting gold plate. This has been the case with partial sets as well as full sets. Now, in respect to health and cleanliness. For myself, I would as soon have rubber as gold. The greatest objection I have to it is,

that, as a general thing, we do the rubber work too cheap. I have heard the expression from a dentist, "I do rubber work for almost any price, because it requires very little mechanical skill to make rubber plates." For gold sets, we should, and generally do, charge full price. Now, I would like to ask the reason why we should do the rubber work for little, or nothing, if it serves the purpose intended and lasts as long as gold? We should receive, for rubber plates, at least half as much as we should for gold plates. I very seldom make partial sets on rubber; the reason for this is, they break so easily where the teeth stand separately, and the ignorant patient blames the dentist, and we often hear the expression, "A set of teeth ought to last a lifetime." We surely ought not to expect to do better work than our Creator; therefore, in the majority of partial sets I make them on gold, as they are better for the patient and less annoying to the dentist. If I am convinced that a suction plate will not be likely to give satisfaction to my patient, I put in a clasp plate, and it is my belief that in many cases it would be far better than a suction plate. Patients find a suction plate very annoying sometimes, and more annoying to the dentist. In using clasps, I generally clasp to the second bicuspids or first molars. I have put shoulders sometimes around the cuspids to secure the plate, and with perfect success. I am very particular to have the clasps perfectly adjusted to the teeth, and I generally prefer a wide to a narrow clasp, because the patient removes the plate frequently for cleansing it, and the wide clasp protects the tooth better than a narrow one in all other respects. I am as careful in fitting a clasp piece as I am with a suction plate, and the patient, as a rule, is better pleased with clasp plate than the suction plate; but the good mechanical dentist must exercise his judgment as to which is the best for his patients. This paper is short, and possibly uninteresting to you; but, gentlemen, I thank you heartily for the kind attention you have given me while reading it. LOUIS BUSH.

Dr. Shields—I have always looked upon rubber and its kindred bases as a temporary substitute for something better, when found. I have for some three years been laboring with metal alumina. It has been used in the profession for years, and I believe has been acceptable. The adaptability of this metal for artificial dentures has been established, and the only question that has arisen is the ability of the profession to work it. It is as abundant in nature as iron, and very generally diffused. Its specific gravity is about 2 1-2 or 2 6-10—it being one of the lightest known; has a light, bluish color, and is not oxydizable. It can be obtained for a dollar an ounce in Europe, and if much used could be obtained for fifty cents an ounce. It makes a good plate. The opinion of the American Dental Association and other associations have, with very rare exceptions, always been in favor of this metal, if it could only be worked. I find, that it can be worked successfully and easily; that it can be cast into dental plates, and that it is better than any other artificial denture. It is cleanly in the mouth; it does not tarnish, and it is light. The plate I show you is the third plate I cast at a single operation. With proper machinery it is almost as easy to work as adamantine base. I have used it for five or six years. I have not found that acetic acid will affect it, and I have seen it after it has been worn several years.

Dr. Menefee—I have used aluminum plates as I would gold plates, but have fastened the teeth on with rubber, as I never found any solder by which I could solder them on to the plate. I have seen plates worn a long time, and have never noticed that they were tarnished. I have used it five or six years. It is a metal that is not well understood by mechanics. You can not polish it like a gold plate, it being a porous and very light metal. I use a mixture of rum and oil with the powder, etc., in burnishing it. In casting an aluminum plate, I would not have any confidence in it. It is so light that it is impossible to make the plate strong, unless it is exceedingly thick, and then it would be cumbersome in the mouth. But the plate, if

rolled, is, I think, far superior to rubber or any other cheap bases. It is not as good as gold or continuous gum. It is lighter than rubber, and the plate, when made properly, is almost as thin as a gold plate.

Dr. Shields—I think the metal, aluminum, is not porous, but is very dense. I don't think gold or aluminum can be compressed very much by rolling. This plate is a cast plate; it is very strong, and there is no solder about it, and it is uniform metal and no mixture.

Dr. Menefee—In moulding it, it is so light that it won't run, and you have got to force it into the place where you wish it to go; consequently, it would be impossible to cast it solid without great pressure, and it would be very difficult to get pressure on heated metal. The ingot is not solid when cast, not having been rolled.

Dr. C. C. Knowles—I have often noticed an erosion of the enamel of teeth which are embraced by clasps composed of gold and platina alloy. There appears to be a voltaic action; an electro-galvanic action taking place between the metal and the vulcanite. There is a changed condition of the secretions immediately connected with the material. I have recently substituted the old style of clasp material alloy, made of gold, silver and copper, and I find it followed by no such results. I believe that the use of the alloy of gold and platina, for clasps, in connection with gold work, is not fit to be used.

Dr. Winter—Of late years, I have abandoned the old silver and copper alloy, and I use nothing but silver alloy, and my plates look cleaner in the mouth and do not discolor. When the copper alloy is used in the mouth I find traces of the sulphate of copper. I have learned how to make a solder just as fine as the plate. I cut off little strips of my plate and use two grains of cadmium to the pennyweight of my plate; cut a little cylinder in my charcoal about the size of the point of my little finger, and then I cut a still smaller cylinder and in that small cylinder I lay my cad-

mium; and then put my scraps in over the cadmium, put on my borax, heated up until it is almost ready to melt, and then apply a little more heat, and as soon as the gold melts the cadmium mixes with it with a slight explosion, leaving my solder in a little round lump and the cadmium in it. I hammer that on the anvil, roll it out, cut it up into little strips, lay it on my plate, put on plenty of borax, heat it gradually until it is nearly to the point of fusing; the cadmium is burned out, and my solder is the same standard, or the same carat, as my plate, and it will not discolor at all. I have used this two years; I find it very tough; it melts easily and is the very finest solder.

Dr. S. E. Knowles—I think the alloy of copper with gold plate is excellent on account of the hardness. The objection that the copper may be converted into a sulphate is, I think, rather an advantage. It is customary, after the soldering process is complete, to boil the plate out in diluted sulphuric acid. This will certainly partially extract the copper with which the gold is alloyed, but it leaves a surface of nearly pure gold; so, while we get the benefit of nearly fine gold on the surface, we have the benefit of the copper in the rest of the plate.

Dr. Winter—In the alloy of silver I find a very stiff plate, all of the spring I want, and no more liability to bend than the alloy containing copper.

Dr. C. C. Knowles—For full plates I always alloy virgin gold with silver. It must be made a little thicker to get the amount of resistance necessary. I am speaking of the introduction of copper only in reference to the material used for clasps. The silver does not impart sufficient elasticity and hardness. I have never seen any oxide or sulphate, or any other salt of copper, where the copper alloy was used. I believe that to be utterly impossible in any plate that is over 18 carats. You can not use gold which is exactly 18 carats, because it is not malleable; 19 to 21 carats alloyed with silver, and from 17 to 19 carats alloyed with silver and

copper, I find to be the better condition of working metal. In making my solder, I first make my alloy and mix my alloy with my gold, melting and remelting it in order to get that ductility that is essential. Sometimes a third melting is necessary for a complete mixing of the alloy. In ninety-nine cases out of one hundred, unless great care is used in mixing them according to their atomic relations, what we call alloys are not alloys, but heterogeneous mixtures.

Further discussion was postponed until Dr. McCowen makes his report.

[During the above discussion, Dr. Shields exhibited specimens of his "Cast Aluminum Base."]

Honorary member, Dr. O. D. Munson, of San Francisco, was introduced by the President to the Association.

Dr. C. C. Knowles moved that an Advisory Committee of five be appointed by the Chair, to consult with the Advisory Committee of the Board of Regents of the University of California, relative to the establishment of a Dental College in connection with said University.

Carried.

Drs. C. C. Knowles, Menefee, Dennis, Lundborg and Austin were appointed said committee.

It was announced that Dr. Younger would clinic at his office to-morrow, at 8:30 o'clock A. M.

RECEIPTS OF THE DAY.

Annual dues	$65 00
Admission fees	10 00
Total	$75 00

Adjourned to 10 o'clock A. M. to-morrow.

THIRD DAY—MORNING SESSION.

Convened at 11 o'clock A. M. President Dutch in the chair.

Roll of officers called. All present except Vice Presidents Menefee and Harris, and Assistant Recording Secretary L. G. Yates.

Minutes of previous session read and approved.

Drs. Charles E. Blake, of San Francisco, and D. N. Powers, of Oakland, were regularly elected to membership.

Dr. McCowen made the following

REPORT ON MECHANICAL DENTISTRY.

Mr. President and Gentlemen of the California State Dental Association: As a member of the Committee on Mechanical Dentistry, I presume something of a report will be expected of me. It is with misgivings I undertake the task, meeting, as I do here, the foremost members of the profession on the Pacific Coast.

I shall expect to derive much more benefit from your criticism than I can possibly expect to confer on any member present by suggestions of mine. Knowing that every one's professional success is dependent on strict attention to details—"little things"—it is of common, every-day matters I shall attempt to report, at the risk of repeating what has already occurred to you, rather than tell of the progress of Mechanical Dentistry from the time when human teeth, teeth of animals, and semblances carved from bone or ivory, held in place by ligatures, were used as substitutes for the natural organs, down to the present time.

The history, rise and progress of Mechanical Dentistry, although very interesting to the student, treats mostly of methods and manipulations so antiquated as to be of very little practical importance at the present time.

I shall not attempt to speak in detail of the various materials in use at the present time as bases for artificial teeth.

In regard to material, I presume there are few, if any, but would place continuous gum work on gold at the head of the list. But to practitioners in the country and small towns these are nearly obsolete; but they soon scrape an acquaintance with *rubber*, and have an occasional call for Weston's metal, or some of the various alloys so frequently used.

Commencing at home, it is of rubber I would speak first. This, by many of the leaders of the profession East, has been denounced as a curse to the profession and the people. Some never dreamed of its many bad qualities till Josiah called their attention to his little claim upon them.

Without presuming to join issue with these greater lights, I may be permitted to inquire whether these curses are due to the inherent quality of the material, or chargeable to admixtures and faulty or defective manipulations and adaptations.

It has been a curse of the profession (innocently so) in this way: The ease with which it can be manipulated serves as an inducement to unprincipled and unqualified persons to enter the field as "Dental Surgeons," who with flaming advertisements announce: "Most beautiful sets of teeth, as good as the best and as cheap as the cheapest, warranted for life," etc., etc. Of all the persons advertising in this way, I doubt if there is one in ten who can put in even a passable gold filling, or knows anything of the minutiæ of metal-work, to say nothing of other qualifications essential to a dentist.

Such announcements and such services as their authors render serve to bring discredit upon all bearing the name of dentist with the masses.

I have a couple of those "beautiful" plates, which, if taken for samples, would bear me out in my assertions and account for many of the curses heaped upon rubber and the profession.

It seems to me, this would easily be rectified if we only had a law, such as several of our sister States have, requiring all persons to demonstrate in some way their fitness,

knowledge and ability, before allowing them to practise. This might be by holding a diploma from some respectable Dental College, or a certificate from a "*State Board of Examiners.*" Then such "*beautiful sets of teeth*" would disappear, and with them many of the curses heaped upon rubber, the profession, and the people. In their places we would find the less pretentious but really artistic and serviceable serving as a blessing to the middle and lower classes, who, generally speaking, are scarcely able to afford gold and other first-class materials.

We are told of ptyalisms and ulcerations from the use of *red* rubber. Granted; but why use the red rubber with its one fourth mercury and take the risks? My observations have convinced me that ulcerations are more frequently due to faulty construction (and possibly aggravated by the quality of the material) than to all other causes.

The wearing of a heavy plate, with a deep, square-cut suction cavity, is a most prolific cause of congestion and inflammation, often followed by very troublesome ulcerations and sloughing of the mucous membrane of the mouth.

Where it is not followed by an absolute ulceration, the unavoidable congestion and inflammation is followed by an hypertrophy of the parts completely filling the suction-cavity. When this occurs, there is *practically* no suction-cavity, nor is the necessity for one felt.

This well-known fact legitimately leads to the inquiry, whether there is ever an absolute necessity for any cavity. I do not feel prepared to maintain that there is not, but will say this much: that I have never seen a case that, in my judgment, needed a suction-cavity of the depth indicated by the blanks found at our dental depots.

As a remedy for the congestion and trouble following it, I would propose reducing the thickness of the plate, and most emphatically to reduce the depth of the suction-cavity to a minimum.

The admixture of all coloring matter, being in itself devoid of cohesion, is a detriment to the strength and elasticity of the material.

To possess a given strength, plates made of such colored material have to be made thicker in proportion to the amount of coloring matter in their composition. This, unless coloring matter is of more importance than utility, is worthy of our consideration. As public benefactors, I consider it the duty of the profession, so far as lies in their power, to furnish dental appliances within the reach of all, and I know of no base that comes nearer filling the requirements than rubber—rubber devoid of all extraneous coloring matter—*black rubber*, if you please.

I have been told that to advocate the use of black rubber would ruin my practice; but in experience I have not found it so, though I have steadily adhered to its use for the past two years. In that time I have made but one plate (temporary) of red rubber, and replaced *it* with black.

The majority of persons using rubber plates do so more for use than ornament. When such persons learn that black plates can be made thinner and lighter, and at the same time *stronger* and more durable than of any other color, and especially than the flesh-color or red, I find no hesitation about a choice. If I should, I would tell them that the flesh-colored is rotten—that the red lacks strength, and owes its beautiful color (more beautiful out of the mouth than in it) to a preparation of mercury, the use of which most people wish to avoid.

My trial-plates I make no thicker than an ordinary sheet of gutta-percha. A plate made of this thickness comes from the vulcanizer in better condition than when made thicker.

My suction cavities I never make deeper than the thickness of a paper collar, ordinarily cutting my pattern from one, or a light card-board. So much by way of comparison to established methods.

"Uncle Josiah's" claim, whether just or not, is one of the vexations incident to the use of rubber, and causes many dentists to discourage its use. An attempt is being made o supersede its use by the introduction of an analogous substance, viz.: "Vulcanizable gutta-percha"—with a fair

prospect of success, as reported by parties using it. It is thought that the gutta-percha can be used without infringing on any one's patent, and if it comes up to the anticipations it will be about equivalant to a decision against the validity of the Cumming's patent, the *Goodyear* having expired.

While giving the greater part of my attention to the humbler material, I would not by any means disparage the use of any other, not in itself objectionable, which seems to me capable of being productive of the greatest good to the greatest number under present circumstances.

All of which is respectfully submitted.

GEO. MCCOWEN.

DISCUSSION.

Dr. C. C. Knowles—So far as my experience goes, I emphatically coincide with Dr. McCowen, in reference to the kind of rubber preferable, and also, in reference to the use of a central cavity. I have met many cases of irritation of the mucous membrane, especially in the fauces caused by the irritation of the rubber plate. I have substituted black vulcanite, and the irritation entirely ceased. I have been in the habit of using it on account of its strength, especially in partial sets, where we demand a greater strength in proportion to the surface covered. It receives a most beautiful polish, and its texture shows it to be more dense. In regard to a central cavity I agree with Dr. McCowen. The central cavity may be useful in temporary sets; but after the absorption of the gums has taken place, I think the plate can be better secured in the mouth by a bead around the circumference of the plate, as you see here [shows specimen], so that it shall perfectly embrace the parts, taking care that it does not come up too high, and that the beading is not so deep as to cause a stoppage of the circulation. Properly placed, it will allow the movement necessary for mastication without displacement. I find such plates give satisfaction and less irritation to the mouth. I trim it so that the beading shall fall within one or two lines within the extent of the plate, as it covers the gum,

and within a line or two of its terminus. The terminal edge which, as it comes against the soft tissues, should not be too sharp, but should be rounded out, especially over the molar process, as there is where irritation is liable to occur. I have here some specimens, connected, indirectly, with mechanical dentistry. [Shows specimens of plates for correcting irregularities of the teeth, and models of mouths operated on.] There is no branch of our profession which is less profitable than the treatment of the irregularities of the teeth. I have had one case under treatment about ten months, of a congenital formation—a tendency of the under jaw to be thrown forward, producing the deformity called "jimber jaw." The six-year molars entirely prevent the closure of the front of the mouth by more than a quarter of an inch. My treatment of this case has been, to use the six-year molars as a fulcrum, having a plate (?) made of common gutta-percha, and having attachments to the sides of it, in the proper position; and having made a cap for the top of the head, I produce constant pressure, forcing it up—this appliance being worn at night and for some time in the day time. I have, in this way, succeeded in bringing the jaws so nearly together that there is less than the thickness of a knife between them, and I hope to be able to bring them close together. The proper expansion of the jaw has not been effected, as unfortunately the deciduous teeth were extracted too soon, and it is necessary to use proper appliances to produce the expansion to give space for the coming of teeth, that will doubtless appear. In this connection, I present you the model of the mouth of a child, which was brought me July 17, 1872. This is another illustration of the premature removal of the temporary teeth. You see how the six-year molars are situated. There is no room between the lateral incisor and the second bicuspid for the appearance of the absent bicuspid, and no place for the canines and bicuspids on that side. On the other side there is a little more space, but not room enough between that lateral incisor and that bicuspid for the appearance of the canine

and bicuspid. I have taken casts of the mouth from time to time, and this is the last one. The second bicuspid upon this side has cut through the gum and is presenting itself. I see no indication of the presence of the other; it may have been mistaken for a temporary tooth, and removed. I will illustrate, on this cast, my method of treatment. You perceive a piece of black rubber, which I use for these cases, and I have used in these cases golden attachments, merely when in situations to press against those molars as a fulcrum. I first took an impression of the mouth and made this appliance. I secured this appliance in its position by connecting it with those teeth, adjusted it nicely, and then by a ligature passing through these slots and around the lateral incisors. Then I use wedges between two or three of the upper teeth, as far as I think it is necessary, before the next step, while they are in that thrown-out condition, keeping them together so that they may not be thrown apart. I take another impression of the mouth, adapted to the then present condition, and secure the front teeth of these two in the same manner as the two lateral incisors in the first instance; and then throw out the lateral incisors in the same manner as the front incisors. Then I adapted another plate, so that they might become partially fixed by the deposit of bone necessary to sustain them, before I carried the thing further. Great care is necessary, lest you produce inflammation and absorption of bone. As shown in this model, the teeth came into place without other external force applied to them. The teeth are now firm, and this last appliance has been worn four months, I think, since the last pressure has been put upon these teeth. I propose to use this appliance until the cuspids are in place and there is no tendency to displacement, causing irregularity of the front teeth. The patient is eleven years of age. I have here another case of overhanging of the upper jaw. This cast was taken after I had built up and commenced to remedy the defect. In the first place, I built this molar tooth up with gold, so as to separate the mouth. I then extracted the second bicus-

pids and commenced my treatment by taking the impression and making a thick, heavy, gutta-percha plate, going as far back as under the eye tooth, but relieving it afterward by an instrument which took the pressure from the eye tooth. After doing this, I fitted a silver cap for that into which this appliance that lies on here should rest. It was made oval, so that when in position there was no tendency to slip. There were two hoops, carrying the bar out far enough to entirely relieve the lips and cheeks from pressure. I made it of very heavy silver. This cap-piece and these silver wings were joined together. Then I had the cap, over the top of the head, provided with an elastic band, which goes under the chin and can be adjusted by a buckle, which holds the cap in place. The cap fits the head, and there is another band attached to the cap, coming around and attached to the wings of this silver appliance. By tightening this up the pressure is brought to bear precisely as desired. The cure of the deformity has progressed so far that the space between the molar and first bicuspid is more than three quarters obliterated. I shall be obliged to raise the fillings somewhat higher. These bicuspids will eventually meet. The whole force of mastication is expended on these four teeth at present.

Adjourned to 2 o'clock P. M.

AFTERNOON SESSION.

Convened at 2:30 o'clock P. M. President Dutch in the chair.

Minutes of morning session read and approved.

The regular order of business was suspended to hear the report of "Revision Committee."

The committee reported a revised Constitution, By-laws and Order of Business; also, Rules of Order and a Code of Ethics, which were amended, adopted and ordered to be printed, under the supervision of the Publication Committee.

The election of officers for ensuing year, and choosing place for next annual session, was made the special order for 8 o'clock P. M.

Drs. Myers, Cogswell and Sichel were appointed to draft resolutions appropriate to the memory of Dr. E. O. Belle, a member deceased since our last annual session.

Dr. W. J. Prather read the following essay, entitled

REQUISITES OF THE DENTIST.

Mr. President and Gentlemen of the California State Dental Association: In offering this paper, I do not expect to present anything new, but shall borrow from others many thoughts that I appropriate, and if they shall influence any of us to be more diligent in our professional duties, thereby bringing up new truths from the exhaustless mines of science and knowledge, I shall have done well.

"The dentist is required to maintain perpetually, and above question, his character as a gentleman and a thorough dentist."

To do the *first*, it is necessary that he *be* a gentleman; and I use the word not in its modern signification. The word "gentleman" has come to mean a *polished* male member of society. "Suavity of manner; grace of motion; elegance of language; a perfect acquaintance with the rules of etiquette," etc., make the gentleman of to-day; while the individual so urbane, so graceful, so elegant, and who never offends against the etiquette of a dining hall or a ball room may be, at heart, a cheat, a gambler and a seducer, without a spark of honor about him.

Such is not my gentleman; I mean a *gentle*-man—*a whole man*; a human being with a heart in him, beating with noble impulses. Now polish him, give him education, give him the culture of refined society, and you have a gentleman worthy the name. Such a gentleman as every dentist should be.

"It is not enough that he prove himself a thorough gentleman. His duty to himself is not there done; he must

prove himself a thorough dentist. There is no use of a professor of a science or a practitioner of an art endeavoring to prove himself thoroughly acquainted with that science or art, if he is not.

"His deficiency will show itself when he least expects it, and all his assumption will only secure for himself greater mortification. The first requisite, therefore, is to *be* what he professes to be; a *dentist*—a *thorough* dentist. What that is it is not necessary for me to define. It is too well understood by this Association."

No half-way attainments will satisfy the man who is determined to be equal to this part of his duty. He will aim higher and higher constantly, "*excelsior*" being on his banner. To him, knowledge gained will be but a spur to greater acquisitions, while broader views and keener perceptions will be esteemed as instruments for penetrating farther into the mysteries of knowledge, which lie still beyond.

"To impress his patients with the conviction that he is worthy of confidence and trust several things are necessary."

He must be able to give an intelligent reason for everything he does, if it be necessary to insure confidence to timid patients or to enlighten those seeking advice. High-sounding words and technical terms, conveying no meaning, would indicate a want of necessary knowledge. Some wisdom is needed to give an answer that is courteous, brief and satisfactory, or to parry the question if occasion requires.

"Our first obligation is to our patients. We are in honor bound to seek their interests before our own. The customs of trade may have sanctioned sale and purchase where only one party could be benefited;" but no one regards it honorable in a dentist to extract good and useful teeth merely to please a patient, by inserting artificial teeth that may perchance look better. A tooth should *never* be extracted until the dentist assures himself that the comfort and good of his patient requires it.

"We are constantly called upon to deal with living and vital tissue, as well as constantly varying symptoms and organisms, the proper knowledge of which is all-important. We may, with truth, say that each case is in at least *some* respect different from all others; consequently, how very important it is that we should be thoroughly acquainted with the symptoms attending each type of disease of the dental organs in particular, so that we may correctly diagnose, and consequently be able to apply the proper remedies.

"Happily, our resources for the relief of pain, the repair of decayed tissues and the cure of disease, are so extensive that properly administered or applied, they will, in most cases, help us," and our patients, with the desired happy result.

Let me here quote from Dr. G. W. Ellis, in a late number of the Dental Cosmos, as giving my views in better language perhaps than I could were I to attempt it. He says: "There are some diseases which, after a certain definite course, will spontaneously subside; these, it becomes our duty, if possible, to curtail. There are those attended with pain of more or less severity; these we are called upon to palliate. There are those whose tendency are to extended involvement and disintegration of contiguous structure; such we must strive to arrest.

"It is that tendency of disease, not only to disappear when entirely neglected, but even to yield to the vital forces, in opposition to injudicious and often very improper treatment, that secures for the charlatan such recognition and patronage as he may enjoy; and not unfrequently the pretender, despite miserable failures, blind bunglings, sufferings protracted and diseases confirmed, succeeds in procuring a pecuniary position vainly aspired to by a conscientious and skilled neighbor. Nevertheless, a fair recognition of the services of Dame Nature and a modest estimation of one's own ability must in time secure the just recognition, appreciation and reward, certain to be accorded to truth and merit."

While my circumstances in life may forever preclude me

from attaining to the standard I have named, my constant aim is to get nearer to it; and I am not too old to learn yet, for I scarcely ever perform an operation but that I think—well, I can do it better next time.

W. J. Prather.

Dr. Myers read the following "Voluntary Essay," entitled

OPERATIVE DENTISTRY.

All professional associations are supposed to be organized and sustained for the common good and advancement of the profession, no matter what that profession may be; and it not only becomes the duty of members to contribute, for the common good, such ideas and experiences as will mutually assist each other, and make the profession more useful and honorable, but it is also an incumbent duty for members to guard each other and the profession against imposition, from any and all sources. Every profession has its unskillful bunglers, or botches, or quacks, or some other kind of impostors, and the dental profession is by no means an exception to the rule. Every man who has the welfare of the profession at heart, will persistently discountenance the quacks, and in every proper manner assist honorable members of the profession to detect them. There are certain characteristics which always discover a quack to observers of human nature. He is always impudent, insolent, assuming, inquisitive, and his practice confined to one or two ideas. He always tries to manifest his own superior knowledge, by running down everybody else; and if he happens to get hold of a good idea or two, it will never do the profession any good. His conversation is always about as useful as so much gas in daylight, and he ever has but one object in view, and that is, to toot his own horn. Having no sense of honor, he will impose on any and every one that trusts him, not only professionally, but any other way. His ideas are narrow, his advertisements are bombastic, his practice a failure, and his pecuniary success is dependent on itinerancy, if he meets honest and skillful competition.

The dental quack is capable of doing so much injury to unsuspecting people, whose sufferings may compel them to patronize him, that it becomes an imperative duty of the profession to guard the public, as far as possible, against the impositions of this unprincipled species.

But there is another species of unprincipled dentistry, which also deserves the execrations of all honorable practitioners. I refer to slighting work, sparing material, or using an inferior article to that represented, for the purpose of speculating at the expense of the sufferers, or underrating honorable work and fair-dealing. There are, no doubt, many of you whose experience will recall instances where unprincipled rivals have contracted to do work at far lower rates than they honestly could live at, and then make up for it by using inferior material, and finishing the work hurriedly and in a disgraceful manner; and your experience has no doubt, also, witnessed the victims of such dentistry suffering all manner of dental pains, diseases and inconveniences, as a result of speculation. I sincerely hope, that no member of this honorable body will ever become so lost to principle, so reckless of the health and happiness of his patients, or so regardless of the good name of his profession, as to barter all these considerations for unscrupulous advantages, that dentists frequently have opportunity to take in the course of their varied labors. Such miserable practice has come under my notice in this State, and this is why I feel solicitous that our Association should make it a point, individually and collectively, to frown down all manner of dishonesty in the profession, by practising on the higher plane of uprightness and fair-dealing. By taking such a stand, individually and as an Association, the grand aim of the Association will have been attained—the placing of its members at the head of the profession—by virtue of the well-earned right to occupy such a high position.

Next to honesty and fair-dealing comes gentlemanly deportment in the dental rooms. It is essential to success. An easy and affable manner toward patients, many of whom

may be ill-grained from suffering, is the only means of obtaining their confidence in the operator, which is a grand help to success, especially with a difficult job. A quack, or an imposter of any kind, can not be a gentleman under temptation to be otherwise, or under exciting circumstances, no matter how well he may affect the character ordinarily, and consequently can never be a permanent success.

All the great men of the dental profession, or those who have obtained eminent success, practically and pecuniarily, so as to rank high in the estimation of their brethren, are men who have not only obtained knowledge in the profession, but have freely imparted that knowledge. They have been open-handed and open-hearted toward the fraternity; they have published to the world their experiences in this or that department, and thus, through liberality, attained eminence. They have not been like the old woman, who for years borrowed a pot in which to boil her potatoes, and when at last she got able to buy one, declared she would neither borrow nor lend. Such men as Dr. Bell, who has thrown out valuable suggestions on the subject of dentition, or that other eminent man, Dr. Harris, who is the source of important information concerning mechanical dentistry; or many other great lights in the profession, who have helped us along in this or that department were of the liberal-minded classes, who did not look upon this all-important calling as something that could, or ought to be, confined to their offices. These men were evidently not afraid of competition; they were not afraid of furnishing information tending to elevate the profession, and such men are not jealous, or envious, or snappy, when they behold the success of others, and they are always willing to appreciate and give due credit to those who do contribute to the welfare of the profession. They always uphold associations for the mutual interchange of ideas, realizing that "a fair exchange is no robbery," and also realizing, that whatever assists and elevates the dental profession, tends to alleviate and dispel human suffering.

The depth of this science has not been half measured,

and its intimate relationship to the science of medicine and general health has received but a tithe of the attention that the subject deserves. I need but instance the effect of teething upon the health of infants, or the excruciating neuralgia that many persons suffer from defective teeth. Were it not for the liberality of interchange between the members of our noble profession, by what means would be obtained the many valuable articles in our dental periodicals, from which we all receive information regarding our practice, encouragement to emulate our noble predecessors and contemporaries, as well as hearty satisfaction and entertainment in the contemplation of the rise and progress of our chosen calling? On the ground that the dental profession is a public benefaction, it is our duty, as an association and as individuals, to bring it to a high standard, especially as it is beset on every side by quacks and impostors, who would make a credulous world believe that cheapness is the principal virtue. The true, honest, and efficient practitioner, always aims for perfection, rather than cheapness, where both can not be brought together. Many pretended dentists, who are not worthy the name, have stealthily crept into temporary practice under the cloak of cheapness, extracting teeth that proper skill and knowledge could easily have saved, or cutting and slashing where a little painless medicine would accomplish a more perfect end without leaving permanent deformity in its wake. Of course, the dentist all wrapt up in self-conceit and avariciousness, sees no duty to the profession or to the world, hears no demand for improvement, and looks upon suffering mankind simply as a field for money-making.

Although the science is in many respects in its infancy, we can call to mind some who think they know it all, and whose practice is not only disgraceful, but in some cases actually criminal. These facts urge the necessity for unity of feeling and unity of action on the part of those who have the honor of the profession at heart, and are eager for improvement, knowing that none are perfect, and all have something to learn. Dr. Beck has truly said: "The saving

of one natural tooth is worth a dozen new ones," and here is one of the deep points in the science. How to save a natural tooth leads to a wide field of study and practice, and has called out the wisdom of many great minds; and none of us know how much may yet be learned of the ways and means of saving that natural tooth. Making new sets of teeth, in a bungling manner, or in a thorough manner, may be more profitable; but the wants and rights of the public may not be as well subserved, and hence the duty of the profession would not be as well done.

The province of the dentist is so rapidly extending and his field of operations so widely spreading, that constant study, interchange of ideas, harmony and mutual assistance between brethren of the profession, are more and more necessary to successfully meet the new and complex demands made upon our skill and ingenuity. Our domain of labor is constantly increasing from year to year, so that mere mechanical operations upon the teeth promises, ere long, to be but a small branch of the calling. But a few years ago the performances of the dentist were supposed to be confined to extracting or patching up old and decayed teeth, or inserting new ones. Now, however, we see, by following up the practices of eminent dentists, as information is thrown out through the dental periodicals, that the surgeons and medical men are sometimes cast in the shade, in operations that were deemed as belonging peculiarly to their calling. The dentists are treating medically, surgically and mechanically, diseases and natural deformities of the mouth, face, and even the nasal cavity. They have gone so far as to supply lost noses and departed palates. One instance in particular is spoken of by Dr. Kingsley, of the New York College of Dentistry, where a new nose was successfully constructed on entirely dental principles, that far surpassed any specimen of surgical rhinoplasty on record. The nose was constructed of collodion, or rose-pearl, colored appropriately, and attached with gold springs to vulcanite pads inserted in the nasal cavity in such a way that it could be removed at pleasure. This is

only one instance, cited to show the constant and gradual enlargement of the dental province, that we may all be on the alert, and keep pace with the new demands that are being made upon our profession, and the scientific and skillful work we may at any time be called upon to perform, which heretofore might not have been considered within our sphere. Such work as that just referred to is forced upon our profession, because of the better adaptability of materials to the purpose, which we have been trained to manipulate. Other inventions, of materials suited to many varieties of purposes, may still more enlarge our sphere, just as the discovery of medicines, for diseases of the mouth, etc., has made the proficient dentist, to a certain extent, a medical man. In view of these things, looking to the present and future requirements of the public at our hands, the dentist who has the honor and usefulness of the profession at heart, will look upon the Association as a school from which he can not afford to be absent. He will also look to it as a help in guarding against the impostors and quacks that infest and bring the profession into disrepute. He will look to it for such legitimate safeguards as will protect its members in ardent endeavors to keep up with the demands of the public, and also protect a confiding public from imposition.

Dr. Sichel read the following paper on

CAUSES AND TREATMENT OF OFFENSIVE BREATH.

There is nothing more disagreeable to the dental operator than the offensive breath of some patients. This offensive breath may be the result of several causes, among which may be mentioned:

First—By neglect of the teeth. Some patients remark that they never clean their teeth for fear of injuring them.

Second—By carious teeth and roots.

In cases, such as just mentioned, I first thoroughly remove all deposits of foreign matter from the teeth that can

be saved, and extract the remaining teeth and roots. I then prescribe the following:

Recipe—Permanganate of Potassa.....gr. iv.
Aqua Menthæ..... ℥ iv.
S. Rinse the mouth frequently.

This will remove all remaining offensiveness. If caused by derangement of the stomach, I prescribe the following:

Recipe—Tart. Emetic..... iv.
Pulv. Ipecac..... ℥ i.
M. ft. Chart No. iv.
S. One every ten minutes till vomiting is produced.

Followed two days after by the following:

Recipe—Willow charcoal..... ℥ ii.
Pulv. Rhubarb..... ℥ i.
S. Half tea-spoonful twice a day, in a little syrup.

Respectfully submitted, MAX SICHEL.

EVENING SESSION.

Convened at 7:30 o'clock P. M. President Dutch in the chair.

Minutes of afternoon session read and approved.

E. S. Belden, M.D., on recommendation of Dr. Knox, was elected an honorary member.

Dr. C. H. Fuller, of San Francisco, was regularly admitted to membership.

Dr. Shields offered the following resolution, which was unanimously adopted, and ordered printed with the Constitution and By-laws:

Resolved, That this Association will recognize it as unprofessional in its members, to receive a student in dentistry for a less term than two years' office instruction, exclusive of the time devoted to his collegiate course.

Dr. Yates offered the following, which was adopted:

Resolved, That the Secretary be instructed to immediately after the close of this session notify all members who are in arrears for more than two years dues, that unless the said arrears be paid within thirty days after the close of this session, their names will be dropped from the roll.

Dr. Knowles, on behalf of Mr. F. B. Forbes, of San Francisco, presented the Association an elegant marble slab and gavel, for the President's use. Received with applause, and a vote of thanks extended the donor.

Hour of special order having arrived, the following officers were elected for the ensuing year:

Dr. C. C. Knowles, of San Francisco.....President.
Dr. J. J. Menefee, San José.....Vice President.
Dr. H. J. Plomteaux, Woodland.....Secretary.
Dr. H. E. Knox, San Francisco...Corresponding Secretary.
Dr. H. Austin, San Francisco.....Treasurer.
Dr. J. J. Birge, San Francisco.....Librarian.

Dr. Dutch, in vacating the chair, said: "I return my sincere thanks for the cordial co-operation that I have had from my associate officers during my administration. I also return my sincere thanks to the committees, for their cordial co-operation; and to the members of the Association for their uniform courtesy during my administration.

"I now appoint Drs. Younger and Dennis the committee to conduct the President elect to the chair.

"It is with great pleasure I introduce to you Dr. C. C. Knowles, your President elect, of the California State Dental Association."

Dr. Knowles—I will not inflict upon you any speech, as I am a man of silence. In assuming the duties of this office, from experience I know its responsibilities, having occupied this position once before. I shall endeavor to do as well as I can for the Association, and I thank you for the expression which has resulted in my being placed in this position.

San Francisco was chosen as the place, and the second Tuesday in June, 1874, as the time, for holding the next annual meeting.

The Auditing Committee reported the books and vouchers of the Treasurer correct; also:

CASH, DR.

To balance on hand commencement last session..	$ 81 85
To receipts of last session.....	175 00

CASH, CR.

By disbursements last session.....	$156 25	
" " since session.....	60 00	
" cash on hand.....	40 60	
		$256 85

WM. B. KINGSBURY,
J. J. BIRGE,
G. W. COOL, } Committee.

Approved.

The following resolutions were adopted by standing vote:

IN MEMORIAM.

WHEREAS, It has pleased the Author of our existence to call our beloved member, Dr. E. O. Belle, from the active scenes of this life to a higher sphere of usefulness, as we believe; therefore, in honor of his memory, and as a merited tribute to his professional genius, together with his exalted character as a man, it is hereby

Resolved, That in the demise of Dr. E. O. Belle society has lost a most useful member, and our profession one of its most active ornaments.

Resolved, That we hereby express our deep sorrow for the loss of our beloved brother, and that our most heartfelt sympathies are extended to his bereaved family in their grief for the loss of a beloved husband and father.

Resolved, That a copy of these resolutions be spread upon the

minutes of the Association, and a copy sent to the family of the deceased by our Corresponding Secretary.

J. N. MYERS,
MAX SICHEL,
J. L. COGSWELL, } Committee.

Consideration of the matter of "Dental College and Dental Education," made the special order for 10:30 o'clock A. M. to-morrow

Notice given that Dr. Younger would clinic again at his office, at 8:30 o'clock A. M. to-morrow.

RECEIPTS OF THE DAY.

Annual dues	$10 00
Initiation fees	10 00
Total	$20 00

Adjourned to 10 o'clock A. M. to-morrow.

FOURTH DAY—MORNING SESSION.

Convened at 10:45 o'clock A. M., President Knowles in the chair.

Roll of officers called; all present.

Minutes read and approved.

Dr. A. B. Wood, of San Francisco, was regularly admitted to membership.

The hour of special order having arrived, the subject of Dental Education and the establishment of a Dental College was taken up, and the following resolutions, offered by Dr. Knowles, on behalf of the Advisory Committee, were adopted:

Resolved, That this Association receives with unqualified satisfaction the assurances that our most cherished hopes are to be realized, through the wisdom and liberality of the Board of Regents of the University of California, in their proposed establishment of a Dental College.

Resolved, That we approve of and recommend the following curriculum of instruction in the College:

1—General Anatomy.
2—General Physiology.
3—General Materia Medica and Therapeutics.
4—General Chemistry and Toxicology.
5—Special Anatomy and Surgery.
6—Special Operative Dentistry and Pathology.
7—Special Dental Prosthesis and Metallurgy.
8—Special Institutes of Dental Science.
9—Demonstration of Operative Dentistry.
10—Demonstration of Dental Prosthesis.
11—Corps of Clinical Lecturers.
12—Board of Examiners.

Resolved, That the Association indorse and recommend the following named gentlemen as proper persons to fill the "*special*" chairs above designated: Drs. S. W. Dennis, Wm. Dutch, C. C. Knowles, H. E. Knox, W. J. Younger, S. E. Knowles, H. Austin and J. J. Menefee.

Resolved, That an Advisory Committee of five be appointed and empowered to act with the Advisory Committee of the University of California in carrying into effect all necessary details of the organization.

(Drs. Cutlar, Bunnell, Birge, Lundborg and Cogswell were appointed said committee.)

President Knowles introduced Dr. B. S. Codman, of Boston, Mass., who made the following remarks:

Mr. President, and Gentlemen of the Association: This is a most unexpected thing for me to be with you on this occasion. Coming, as I did, from Boston, some six weeks ago, I determined to know nothing about teeth or medicine; coming to the far Pacific Coast simply to breathe the mountain air and view its scenery. Thirty-one years of my life have been connected with the profession of dentistry. I understand that you intend to connect yourselves with the Medical School of the State of California. I believe that will be the best thing you can do. In Massachusetts we have

two schools of dentistry; one goes limping along, without money and without means of support, bolstered up by a few men that are trying to bolster it along, whilst the other school, which is connected with the Harvard Medical School, has all of the appliances and all the aids of that money-eyed institution, and everything to make a respectable school. Again, they have wealth, and they pay their professors. No school of dentistry can be able to pay its professors; the fee for tickets is not enough to support it. Then, again, the dental school confers honor upon the medical school, and the medical school, in return, confers honor upon the dental profession. Why? Because a man who graduates from a medical school, like Harvard College, and receives his degree of dental surgery, of course stands higher in that school than he would from a small school—poor and without means. I have not been long enough here to understand what you propose doing; but I hail with delight any body of men, dentists or surgeons, who are trying to take a higher and nobler stand; and I believe, that sooner or later, the results will be the advancing of science, enabling you to get better fees, to do better work, and to take a stand which will be more satisfactory to your own consciences. I find, as I look around, that the dentists here have some improvements we have not. This is an honorable body; and I simply come here to lift up my voice to say, that here, in the midst of great rivers and mountains, and great people, with great hearts, everywhere I go I am received with flattering attentions and openness of heart, which bespeak a great people and a great country. I thank the Lord that I am a member of this profession; and if there is anything that Massachusetts can do for California, she is ready, with her right hand, to do it. The dental society of which I am a member, and was one of the original formers and promoters, I know would do anything in their power to let you know what they have learned and accomplished; and anything I can do for you, to put you in the way of learning their way of putting the matter through in the right shape, I will do.

On motion of Dr. C. C. Knowles, Dr. B. S. Codman was made an honorary member.

On motion, it was agreed to have an evening session, and that we adjourn this annual session at 10 o'clock P. M.

Adjourned to 2 o'clock P. M.

AFTERNOON SESSION.

Convened at 2:30 o'clock P. M. President Knowles in the chair.

Minutes of morning session read and approved.

T. H. Furgerson, D.D.S., of San Francisco, was elected to membership.

On motion, the Publication Committee were instructed to publish such part of the proceedings as they might deem proper.

The Legislative Committee reported as follows:

Mr. President, and Gentlemen of the California State Dental Association: Your Legislative Committee have performed the duty assigned them, and respectfully report the following for your consideration:

A LAW TO REGULATE THE PRACTICE OF DENTISTRY IN THE STATE OF CALIFORNIA.

"*Be it enacted by the General Assembly of the State of California*, That it shall be unlawful for any person to practice dentistry in the State of California, for compensation, unless such person has received a diploma from the faculty of a dental college, duly incorporated under the laws of this or any other State of the United States, or foreign country; or, a certificate of qualification, issued by the Board of Examiners of the State Dental Association. *Provided*, That nothing in this section shall apply to persons now engaged in the practice of dentistry in this State, before the first day of January, 1876.

"Said Board of Examiners shall be appointed by the President of the California State Dental Association, and consist of three practitioners of dentistry, who shall be regular graduates of a dental college, duly incorporated under the laws of this or any other State of the United States; or, persons possessing the evidence of qualifications contemplated in this Act.

"The Board of Examiners shall serve for a term to be determined by the California State Dental Association.

"The Board of Examiners shall meet at San Francisco, California, at least once a year, for the purpose of examining applicants, after having given at least sixty days' notice of such meeting, in some newspapers published in the cities of San Francisco and Sacramento, of general circulation throughout the State. They shall also have power to make such arrangements as shall be necessary for the prompt and and efficient performance of their work, as such examiners.

"Each applicant shall, on receiving a certificate, pay into the treasury of the Board, the sum of ten dollars, which shall constitute a fund to defray the expenses of the Board; and out of the fund thus created each member of said Board of Examiners shall receive the sum of ten dollars per day, and all necessary expenses, for services rendered as such examiners.

"Any person who shall practice dentistry, without having complied with the requisitions of this Act, shall be deemed guilty of a misdemeanor, and upon conviction thereof shall be fined not less than fifty dollars, nor more than two hundred. *Provided*, That nothing in this Act shall be construed to prevent physicians and surgeons from extracting teeth.

"All prosecutions under this Act shall be by indictment before the Justice's Court in the county where the offense shall have been committed, and all fines imposed and collected under the Act shall be paid into the treasury of the county where such conviction shall take place, for the use of the common schools within such county.

"This Act shall take effect and be in force from and after its passage."

H. J. Plomteaux,
C. C. Knowles,
W. J. Younger,
Henry E. Knox,
S. W. Dennis,
Jos. J. Menefee,
} Legislative Committee.

It was moved and carried that the Association approves of the above Act, in its general features, and that it continue in the hands of the Legislative Committee, for the purpose of fitting it legally to become a law, and present the same to the next Legislature for enactment, using all honorable means to secure its passage.

Dr. F. E. Bunnell read the following paper, entitled

DENTAL ETHICS.

Mr. President, and Gentlemen of the California State Dental Association: Two years ago I was assigned the duty of preparing a paper upon the subject of Dental Ethics. For reasons which it is unnecessary for me to explain, I failed to comply, during the session of this Association of last year. I shall endeavor to show, in the paper I propose to read, that when we do wrong we are always punished. My punishment consisted in being assigned no duties at all for *this* session. The President got even with me in that way. But, gentlemen, we have now a new President—a new Savior, and it would be manifestly unjust for me to demand his blood as an atonement for my sins. I have therefore repented of my past conduct, and concluded to shed my own blood for the remission of my past sin—as I believe we shall all have to do if we commit sin. I have, accordingly, with much contrition, begged the opportunity to atone for my past conduct, by presenting a paper upon the same subject at this time. The paper, I think, possesses great merit; but its merit consists only in its brevity.

Dental Ethics; or, Principles applied to the Dental Profession in regard to Morality and Immorality. Ethics is the

science that treats of human actions and mental affections, considered as virtuous or vicious, right or wrong; moral philosophy, morality. The science of duty; the principles which prescribe what ought to take place in human conduct and actions. More precisely defined, ethics is that division of practical philosophy comprehending the doctrines of the right in human life, and is distinguished from policy and æsthetics, which embrace, respectively, the doctrines of the expedient. As applied to the dental profession, in what would a code of ethics consist, to render the profession moral, right and just? I believe there is in every one a sense of duty, or principle, which points unerringly to the right and wrong in all our actions; yet, there may be within us an element which sometimes leads us to commit the wrong. When we do right we are always compensated by a consciousness of having done so. When we do wrong we inevitably stamp upon our characters that which makes us unhappy, or miserable. We have inflicted upon ourselves an injury which is not entailed upon the person wronged. If this is true, and I believe you will all agree with me that it is, you will perceive that it will always *pay* to do right. If we fill a tooth for a person, we know, approximately, what it costs for material, the time expended upon it, the quality of the filling, the time expended in acquiring the skill which enables us to do it.

If we ask ourselves how much we would be willing to pay for the same service, if performed for ourselves, under the same circumstances, and charge our patient the same amount for the operation as we would be willing to pay, and no more, we are then simply *doing as we would be done by*, and are doing morally right. If we say to our patient, I have put $5 worth of gold in your tooth, when in fact we have used only $2, we have told an absolute lie, and the patient will be likely to find it out some time, and of course will not employ us again. So *that* lie will not pay in a pecuniary point of view, as we have seen it will not pay in a moral point of view.

If a dentist holds out false inducements in his advertise-

ments, or otherwise, pretending to work cheaper and better than others, when he and others know it to be false, he is then a charlatan—an empiric—a fraud. A charlatan is one who makes unwarrantable pretensions—a quack—a mountebank. Cheap dentists, as well as other cheap things, are delusive. As a general thing, cheap things are the dearest. This is especially the case with cheap dentistry. It is always baneful, both to the public and to the profession. There are dear dentists; but they are only so when they charge a false value for their services, which they may do through an over-estimate of their capacities. Such will ultimately be avoided, for the reason that they do not render a fair equivalent for the money they receive. But the cheap dentist should always be shunned as dangerous—a fraud upon the profession, as well as upon the public. He will take the patient's money, and betray him into the belief that his work is well done, when in fact an injury has been inflicted upon him; when he finds, perhaps too late to remedy the evil, that he has been duped and betrayed by an ignorant pretender—without capacity, honesty, or fidelity—who has not only betrayed his patient, but disgraced or injured an honorable profession. He should be regarded by all as an arrant impostor, a shyster and fraud. If one employs a cheap dentist because he is cheap, he had better look out for him, or rather, for his teeth, after he has manipulated them. We find charlatans and quacks in all professions; but there is, perhaps, no profession that opens the door so wide for the practice of the charlatan as the profession of dentistry. As a general thing the impostor "hangs his banner on the outer wall"—a banner so significant of fraud that we might suppose the cry would be: "Another charlatan has come." I allude to advertisements that we see in the newspapers, one of which reads as follows: "That is so!! Beautiful and substantial sets of teeth, only $15, and warranted equal to any. Beautiful gold and platina fillings, for $1 and upward, and warranted for life. Twenty years' practice in New York City." Practice of what? Does he mean the same frauds his advertise-

ment asserts? This is a sample, with others that have been spoken of here, of such frauds as represent the immoral ethics of the profession, whereby a fraud is practiced upon the community. Our standard of ethics should be high. No false representations should be made to the public; no falsehood should ever be uttered; no vulgar insinuations indulged in before our patients—in short, no one should aspire to be a dentist without the consciousness that he is a gentleman. To hold out false inducements for the purpose of securing patronage; to depreciate the work of others, when that work is well done—both show a mean, dishonest and contemptible spirit, the tendency of which is to degrade the individual and the profession to which he *claims* to belong. As cleanliness is next to godliness, and as godliness is supposed to be allied to morality, it should command the respect of our profession, and be considered of importance in our Code of Ethics. Our instruments, towels and person should be clean. If we thrust our fingers into the mouth of a sensitive lady when the nails are clad in the habiliments of mourning, we have no right to call her whimsical if she retires from our office with supreme disgust. A bad breath is a useless abomination. We all know how to sweeten the breath in a minute, if it is not naturally so, and to neglect to *do* this is an offense that should never be tolerated.

Gentlemanly deportment should find a prominent place in our Code of Ethics. The manner should be easy, though impressive and firm, yet so guarded as to inspire confidence. No fear or hesitation should be exhibited before or during an operation; yet the feelings of the patient should be respected. Never assume to possess merit beyond that to which you are justly entitled. In the attainment of knowledge no half-way house entertainment should satisfy our appetite; but we should continue our journey, with unceasing effort, although the path may be intricate and laborious, until we approach the end of the route, where the entertainment is sure to be sumptuous.

Gentlemen, this subject is illimitable; but I will not insult

your intelligence by pointing out the requisite omissions and commissions which your good sense will dictate to you in regard to a necessary deportment. I will therefore close, with this injunction: Gentlemen, always preserve to yourselves the consciousness of being faithful to yourselves, and faithful to those who place themselves under your charge.

Dr. C. C. Knowles—I wish to exhibit to the Association this skull, which is the skull of the Modoc Indian chief, Enos, who killed Captain Ben. Wright. My authority for this is the statement of the man who killed him, and who knew him well. He recognized him by certain marks upon his ears and scars upon his face. He was supposed to have been hanged, with another man who was convicted of the murder of Captain Wright; but it was the wrong man who suffered the penalty, and this Indian escaped. The man's name who killed Enos, and presented me with this skull, is Sunnett, a German. The body was buried for two years, and when Sunnett left that section of Oregon he brought this with him and presented it to me, some few years ago. There have been some statements made in the papers in regard to this Indian, Enos, which I have long wished to correct.

Dr. Yates exhibits to the Association the right superior molar tooth of a fossil elephant, found in Livermore Valley, Alameda County, eight or ten feet below the surface, in a gravel deposit.

Adjourned until 7 o'clock P. M.

EVENING SESSION.

Convened at 7:20 o'clock P. M. President Knowles in the chair.

Minutes read and approved.

The President appointed the following standing committees for the ensuing year:

STANDING COMMITTEES.

Dental Pathology and Surgery—Younger, Austin and Hubbard.

Dental Therapeutics—Bunnell, Cornwall and H. C. Davis.

Dental Chemistry—Cutlar, Sichel and Davenport.

Operative Dentistry—Dutch, Beers and Kingsbury.

Mechanical Dentistry—Hughes, Fuller and Winter.

Dental Histology and Microscopy—S. E. Knowles, Yates and Furgerson.

Dental Literature and Education—Dennis, Lundborg and Shields.

Publication—Knowles, Plomteaux (ex-officio) and Knox.

Executive—Knowles, Plomteaux (ex-officio), Cogswell, Bush and W. S. Davis.

The President was granted thirty days to select subjects for Theses and make assignments.

[The following subjects have been selected and assigned since adjournment—SEC.]

THESES.

An Inquiry into the Causes and Treatment of Degeneracy of Children's Teeth—D. M. Hughes.

The Secretions of the Mouth, considered in their Normal and Abnormal Characteristics—T. H. Furgerson.

Pregnancy, as Affecting the Teeth—A. Cornwall.

The Inter-relations of Dentistry and Medicine—J. A. W. Lundborg.

Extraction of Teeth—F. M. Shields.

Dental Education—H. J. Plomteaux.

All members of the Association are respectfully requested to present voluntary essays, on any subject pertaining to the profession, which they may select.

Dr. Furgerson was admitted to membership.

The President and Secretary were instructed to furnish the Advisory Committee with proper certificates of their appointment.

The following resolution was adopted:

Resolved, That the thanks of this Association are hereby tendered to the Press, for the courteous manner in which they have noticed our proceedings.

Bills to the amount of $81 75 were reported from the Executive Committee as correct.

Allowed, and order drawn on the Treasurer for the amount.

The Secretary was allowed one hundred dollars for services and expenses during the past year.

The Committee on Publication were empowered to charge members fifty cents per copy for the proceedings of the Association, when published, if they deem it proper.

Dr. Cutlar read the following essay, entitled:

THE MOUTH: ITS STRUCTURE AND FUNCTION.

In connection with the discussion of subjects pertaining to our specialty, there is a thought which has, no doubt, often presented itself to the minds of many of us. It is: that the practical and the mechanical acquirements of our profession seem to be in advance of a more general or theoretical knowledge of dental science.

Until more recently, the labors of the profession, it would appear, have been directed to the special subject of the dental organs, in their efforts to develop the highest degree of skill in *their* treatment and preservation, without reference to those associate organs of the mouth which properly come within the range of dental practice. But, in the past few years, we have beheld an advance in the march of dental science, which is certainly looking to a higher standard of professional attainment than that which has existed in the

past. The field of study and practice is gradually enlarging, as evidenced by the increasing number of valuable scientific works being constantly added to our dental libraries, the higher standard of instruction pursued in our colleges, and further, by the character of subjects and the more elevated tone of discussion in our societies and conventions.

These all point to more extended investigations, in which all the separate organs of the mouth are receiving their share of attention, not only because of their relation to the teeth, but independently, with a view to their own distinct and individual treatment. Recognizing, therefore, the importance attaching to these parts, both in their *relation* and *separate* connection, let us proceed to examine them as presented in the oral cavity.

On viewing the mouth from its entrance, we observe it to be an irregular, oval-shaped cavity, bounded *in front* by the lips, *back* by the soft palate and fauces, at the *sides* by the inner surfaces of the cheeks, *above* by the palate and the upper row of teeth, and *below* by the inferior teeth, the tongue and its attachments to the body of the inferior maxillary bone.

Contained in this space we find the teeth, the gums, the tongue, the palate and the glands. Upon a closer inspection we discover a delicate mucous membrane lining its entire surface, and continuous with the course of the air passages and alimentary canal.

Commencing with the *lips*, they are but folds of muscular tissue, forming what is known as the obicularis oris muscle.

Passing these, we observe a space included between the teeth and the inner surfaces of the cheeks and lips. This is known as the *vestibula*. It appears to have no special significance except as forming a receptacle for the purposes of mastication, and giving freer action to the movements of the mouth. In providing this space, however, Nature seems to have wisely determined for the operator, in thereby facilitating his operations upon the dental organs. Continuing our examination, the teeth are next seen arranged in two arched-

shaped rows, extending back and along the sides of the oral cavity. They are firmly fixed by the roots in the alveoli or sockets of the superior and inferior maxillary bones, which give them strength and adaptability to the uses of mastication for which they are designed. Their number, their classification, and also their anatomy, are supposed to be too well understood by the practitioner of the present day to require an extended notice of them here.

Overlying the alveolar processes is a dense covering of mucous membrane known as the *gums*, which in a healthy state are quite hard, and give but little sensibility to pressure. Their margins extend well up and are held in close connection with the necks of the teeth, forming a scolloped appearance, corresponding with the margins of the alveolar processes in which the teeth are implanted.

Pursuing our investigations still further, the attention is attracted to a large, conspicuous, cone-shaped organ, lying at the base of the mouth, in rear of the teeth, occupying and almost completely filling the space included within the inferior dental arch. This is the tongue. It is composed entirely of muscular fiber. The muscles forming its structure are the *genio-hyo-glossus*, the *hyo-glossus*, *stylo-glossus*, the *palato-glossus*, and the *lingualis*. The base of this organ lies well back in the pharynx. Its position is forward and upward, with its apex directed toward the roof of the mouth. It is attached at its sides to the jaw by double folds of mucous membrane, which, uniting at a point beneath its apex, forms what is called the fenum-lingual. The dorsum or back of the tongue is somewhat convex. Its surface is covered with a number of follicles and small papillæ. In these reside the sense of taste, with which the tongue is endued. They are supplied with minute filaments from the gustatory branch of the trifacial nerve. The glosso-pharyngeal and the hypoglossal nerves are also distributed throughout its structure, giving it both the power of motion and sensation. Its muscular attachments are such as to admit of great freedom and latitude of motion, which admirably adapts it to the purposes

for which it is intended. Of these, we will yet have occasion to speak.

Passing from the tongue, we come next to the palate, which forms the roof of the mouth. It may be described as being that portion of the cavity contained within the superior dental arch. Its surface is more or less concave, varying in different cases. Its structure is of a dense fibrous tissue, covering the palatine processes of the superior maxillary and palate bones, and continuous over the soft palate. This latter portion of the palate forms the posterior walls of the oral cavity, and differs from the hard palate in that its structure is made up of muscular tissue entirely. This tissue consists of the five palatal muscles, which act as constrictors and elevators of the palate, and are immediately concerned, in connection with those of the tongue and throat, in the act of *deglutition*. Both in a medical and surgical point of view, these parts are of interest, as being often the seat of inflammatory troubles, requiring active and persistent treatment. If we examine the palatal process of the superior maxillary bone, we will find that it is but a thin plate of bone, separating the roof of the mouth from the nasal fossæ. It can be seen, therefore, how easily these two cavities may be made to communicate. Such a condition, of an abnormal character, not infrequently exists, under the name of cleft palate—a complication which, to successfully treat, usually calls forth all the skill the surgeon possesses, and frequently the services of the dentist are brought into requisition.

Any discussion of the subject engaging us would be wanting without some notice of those glands which perform a very important office in the functional action of the mouth. They are the organs of insalivation, and those well-springs, so to speak, whence comes that salivary flow that so often baffles the skill of the operator. The first of them, as to size, is the parotid gland, situated in the space immediately in front of the lobe of the external ear, lying, in its main portion, deeply imbedded, and extending behind the ramus of the lower jaw. This gland, like the others of the mouth, is

composed of a variety of lobes, or a number of miniature glands in clusters, which, in turn, are made up of smaller lobules, formed by the still smaller *globules*, which possess the secretive power of the gland. Its structure has been aptly compared to a bunch of grapes, the stem answering to the main duct, which conveys the secretions into the mouth. The saliva from the parotid gland is conducted through Steno duct, and enters the mouth upon the inner cheek, at a point opposite the second molar tooth. The sub-maxillary gland lies beneath the deep facia of the neck, within the sub-maxillary triangle. Its structure is similar to that of the parotid gland, but differing from it in being somewhat smaller. It discharges its secretions into the mouth through Wharton's duct, at a point near the frenum of the tongue. By observing closely this portion of the cavity, we can discern a number of other small papillæ, or pimples, underlying the tongue. These are the ducts of the sub-maxillary glands, of which there are more than a half dozen lying in and around the symphysis of the lower jaw.

We have yet to notice, briefly, the principal nerves and arteries of the parts we have been studying. They may be arranged into those of the superior and inferior maxillary bones and tongue. At the posterior part of the superior maxillary bone are several small foramena, or openings, through which enter the dental nerves and blood vessels that are distributed to the teeth of the upper jaw. The inferior dental nerve and artery enter the sub-maxillary bone at a large foramen upon the inner surface of the ramus, and, running along the canal, distributes branches to the inferior teeth and gums, finally making their exit through the mental foramen, an opening to be seen at the side opposite the bicuspid tooth. The nerves of the tongue being already alluded to, the only artery of importance belonging to that structure is the lingual, which is a branch of the external carotid. Its course is along the sides of the tongue to its point, where they terminate by uniting. The surface and muscles of the palate are supplied by the nerves and vessels

of the anterior and posterior palatal region. The anterior or naso-palatal nerve enters the roof through the incisive foramen, situated just in rear of the incisor tooth. The posterior palatine nerve and artery enter through the foramen by that name, and are distributed to the parts of the soft palate. The coronary arteries are branches of the facial, which, dividing at the angle of the mouth, extend along the lips. These arteries lie so near the inner surface that their pulsations can be easily felt with the finger—a fact it may be well for us to regard in our operations in this region.

With this necessarily imperfect review of the *structure* of the mouth, in which we have attempted only such a general description of its separate parts as our space would permit, we may now proceed to ascertain what are the functions belonging to this cavity in its capacity as an organ of the human system. By remarking the prominence given to the teeth in this space, we at once determine that they have an important function given them as the organs of mastication. In the several processes of receiving, masticating and preparing the food for purposes of *digestion*, all of the organs we have considered bear more or less a distinct and active part. In illustration of this, we have the lips acting as *prehensors*, which seize and convey the food and like substances to the oral cavity. The act of masticating and preparing the food thus received is performed by the combined agency of the teeth, the tongue, and the salivary fluids. The teeth, as masticators, are employed in breaking up and grinding substances introduced into the mouth; the saliva, by mixing with the mass so formed, aids in reducing it to a softer and more pulpy consistence, preparatory to its being rolled up and formed by the tongue into balls, or *baluses*, of a size convenient for swallowing and being introduced into the stomach.

The tongue may be said to exercise a presiding influence over the teeth, in its capacity as a *feeder*, so to speak, to the organs of mastication, by regulating the supply of food submitted to their action, and by directing and controlling the

acts of deglutition. It is the organ alone in which resides the special sense of taste, and altogether we find its functions to be of a more varied character than those of any of the parts coming under our notice.

The situation of the mouth at the entrance of the alimentary canal, together with its special functions of mastication, insalivation, deglutition and gustation, all combine to give it an essential importance when viewed in relation with its associate organs of the digestive system; and it is this relation which renders it a subject deserving our most careful study as oralists, and especially as dentists. Through such a knowledge of its character, we readily perceive the necessity of maintaining a uniform action in the discharge of the mouth's functions. Otherwise, we have a derangement of function in those dependent organs of the general system which impairs their healthy action, and eventually invites disease. It is such thoughts as these that the science of medicine suggests for our consideration with regard to the mouth; and, so far, it may be said to have conferred a boon on us as *specialists*, in showing us our increased *responsibilities* as the especial guardians of the teeth.

The President and Secretary were instructed to draw orders on the Treasurer for all necessary expenses incurred on behalf of the Association, after its adjournment.

The usual vote of thanks was tendered to the retiring officers for their services, etc.

A long and interesting discussion was entered into relative to the proposed Dental College, and that part of the President's address relative to the Board of Regents of the University of California, during which Dr. C. C. Knowles offered the following resolution:

Resolved, That from the sources of information at hand, and the conclusions that were to be drawn from those sources of information, we indorse the position assumed by our ex-President, Dr.

Dutch, relative to the action of the Board of Regents of the University of California, in relation to the formation of a Dental College.

RECEIPTS OF THE DAY.

Annual dues	$5 00
Admission fees	10 00
Total	$15 00

Minutes read and approved.

Adjourned at 9 o'clock P. M., to meet in fifth annual session at San Francisco, Tuesday, June 9th, 1874, at 10 o'clock A. M.

H. J. PLOMTEAUX,
Secretary.

TRANSACTIONS

OF THE

CALIFORNIA STATE DENTAL ASSOCIATION,

AT THE

FIFTH ANNUAL SESSION,

Held at San Francisco,

COMMENCING JUNE 9, 1874.

SACRAMENTO:
RECORD BOOK AND JOB PRINTING HOUSE.
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DISCLAIMER.

The California State Dental Association, although formally accepting and publishing the reports of the various standing committees, and the essays read before the Association, holds itself wholly irresponsible for the opinions, theories or criticisms therein contained, except when otherwise decided by special resolution.

OFFICERS, 1874-5.

President,
H. H. PIERSON, Sacramento.

Vice-President,
WILLIAM B. KINGSBURY, Santa Clara.

Secretary,
H. J. PLOMTEAUX, Woodland.

Corresponding Secretary,
H. E. KNOX, San Francisco.

Treasurer,
J. J. BIRGE, San Francisco.

Librarian,
J. W. WINTER, San Francisco.

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LIBRARY
COLLEGE OF DENTISTRY
UNIVERSITY OF CALIFORNIA
SAN FRANCISCO.

TRANSACTIONS

OF THE

California State Dental Association.

FIFTH ANNUAL SESSION.

San Francisco, June 9, 1874.

Pursuant to adjournment, the Fifth Annual Session, in Anthony's Hall, was called to order at 10:45 o'clock A. M., by the President, Dr. C. C. Knowles.

Roll of officers called. All present except Vice-President, J. J. Menefee, and Treasurer, H. Austin.

On motion the Executive Committee were instructed to employ a reporter to report the discussions of the entire session.

Dr. H. Austin tendered his written resignation of membership. On motion, accepted.

Dr. F. M. Hackett, of San Francisco, and Oscar L. Gordon, of Santa Cruz, applied for membership.

It was agreed that the daily sessions be held from 10 o'clock A. M. to 12 o'clock M.; from 2 o'clock to 5 o'clock, and 7:30 o'clock to 9:30 o'clock P. M.

On motion, the President was requested to deliver his "Annual Address," at 2:30 o'clock P. M.

A communication from T. H. Ferguson, D.D.S., relative to violation of the Code of Ethics; also his written resignation of membership, was read, and action thereon deferred until the afternoon session.

Adjourned till 2 o'clock P. M.

FIRST DAY—AFTERNOON SESSION.

Convened at 2 o'clock P.M., President Knowles in the chair.

Roll called, and minutes of morning session read and approved.

Drs. C. S. Lane and F. B. Roslewin, of Napa; W. B. McAllister and S. E. Goe, of San Francisco, applied for membership.

The Executive Committee reported favorably on all applications for membership. Candidates balloted for and elected.

Drs. Lane, Gordon and Roslewin were admitted to membership.

President Knowles delivered the following Annual Address, which was received with applause:

PRESIDENT'S ANNUAL ADDRESS.

GENTLEMEN: Again have we met to exchange greetings as friends and co-laborers in a noble and beneficent profession. Welcome, doubtless echoes from each heart, as it trembles on every lip. May these periods of reunions never cease; but grow more and more rich in intellectual, social and pro-

fessional pabulum, as age and experience unfold before us the broadening fields of usefulness.

The past year has doubtless afforded much in our experience, which here concentrated and made of record will be of use to us and the profession at large. Let us freely enter into the work of the hour, and make *this* session, equally with the past, fit to take its place in the ascending scale of our progress.

True, we are but four years old; but we may, with pride, congratulate ourselves that we stand the acknowledged equal of much longer established kindred associations.

Our published records have elicited marked words of praise from the leading journals and men of our profession; and we have but to go on in the line we have marked out for ourselves, to gain a place of high honor, and professional merit among men.

Each year has added to our numbers and influence, and I hope the time is near when we may take by the hand every respectable member of the profession in the State.

But numbers alone will not give us that power and influence to which we aspire. Work, work, gentlemen, with both hands and brain; *untiring work*, under intelligent and scientific direction, will throw open the doors of success, and crown the votaries of any calling with honor.

My visit to the "National Association," and the acquaintance made with many of the foremost men of the profession, and the knowledge gained of what a very few years have done in the advancement of our speciality, have given me hope and courage for the future; and I almost wish I was "young again," that I might share in its triumphs.

But, however much has been achieved, much remains to be done. The past is but a prophecy of the future. Only the threshold of the temple has been reached, and before we can receive ministrations from its *sanctum sanctorum*, we must purge ourselves of much that is crude or false, by higher aspirations, through earnest toil, to gain those qualifications which will entitle us to even sit in its hallowed presence.

Knowledge is said to be power; but knowledge alone is, like faith, without works—which the Apostle James says, is "*dead.*" *We, as well, need wisdom*—mere knowledge—the cultivation and enlargement of the intellect, by the storeing up and massing up of the facts, events, discoveries, and conclusions of the past, though valuable as a means, should not be the end of our ambition. We may master all the heights and depths of science, the lengths and breadths of every subject of intelligent human inquiry, and build upon their premises the most comprehensive philosophy; but without that *wisdom*, that *common sense* which can apply principles to practical use, our learning is vain. The happy association of knowledge and art—the broad rich fields of philosophy, adorned and beautified by the hand of the artist, whose touch, skill, and judgment inspires all that he touches with *use*, as well as grace and beauty—these together, hand in hand, alone can fulfill the conditions, and satisfy the demands of man's highest aspirations. The true artist is the greatest philosopher, and the greatest philosopher is a true artist. Study to *know*, as a *means*; reflect to apply, as an *end.*

Says the Poet Cowper:

> "Knowledge and wisdom, far from being one,
> Have oftimes no connection. Knowledge dwells
> In heads replete with thoughts of other men—
> Wisdom, in minds attentive to their own
> Knowledge—a rude unprofitable mass.
> The mere materials with which wisdom builds,
> Till smoothed, and squared, and fitted to its place,
> Does cumber whom it seems to enrich.
> Knowledge is proud that it has *learned so much*—
> Wisdom is humble that it *knows no more.*"

At the close of the last session we had good reason to expect that we might now congratulate ourselves that the hopes and labors of years had been crowned by the establishment of a College of Instruction, on this coast, in full working order. Such, however, is not the case.

True, a child has been born to us, and named; but whether now dead, *or at wet-nurse*, I am not able to say. I hope something will be done at this session to determine the matter.

The Bill to "Regulate the Practice of Dentistry," reported by your committee last year, and by you adopted, was presented in a modified form to the last Legislature, but failed to become a law.

Whether that is a matter of regret, under the circumstances, may be a subject for difference of opinion. No effort to obtain State aid in the establishing of a Dental College was made; and another two years must pass before we can even know whether such aid can be obtained. This, I believe, is to be regretted, as I have reason to think that if our claims had been properly presented they would have been favorably considered.

I forbear to say more on these topics, till they are more formally before you upon reports.

On two former occasions, I have presented to you my views upon what the profession ought *to aim at becoming;* and have more largely hinted at the means necessary to obtain those ends. Time has only strengthened those conclusions; and if I could find words to more forcibly impress upon you the stern demands which force themselves from within and without, I would most gladly do so. Thanks to the strong determination and zeal of a few leading minds of the profession who, year after year, have with pen and voice, and sacrifice of time and money, struggled to awaken the profession to a proper sense of self-respect, have established and maintained to their cost, colleges, text books and periodicals, and by precept and example led the way to a higher appreciation of what *ought to be* the aims of the profession. Thanks, also, that this labor has not been altogether in vain.

I confess I have but small hopes for the rank and file of the present generation of dentists. But the growing spirit of emulation, of a broad and deep preparatory foundation

upon which to build a successful professional career, the widening distinction which the public is fast recognizing between the truly competent professional men and the mere quack, all promise well for the future.

I believe the college which first extends its curriculum to embrace a full medical course, or which demands a certificate of graduation from some recognized school of medicine, as a *condition of matriculation*, together with a full three years' course of private study in our speciality, and at least a good English education, will receive the approbation and hearty co-operation of all men who have the best interests of the profession at heart. *There is no time lost in such a preparatory course.* The increased respect of the community, and the fuller recognition by the established professions, to say nothing of the enhanced individual advantages which this course of preparation would secure, would more than overbalance all cost of time and money involved. It is a mistake to enter any profession at too early an age.

In all large cities especially, there ought to be established a *dental infirmary*, where the poor, and those who are not able to pay full professional fees, could receive proper treatment, and not be subjected, as they are now, to either forego all treatment, or place themselves in the hands of men totally incompetent to render the aid they need.

Such an institution would be a grand auxiliary in the proper training and instruction of students; would elevate the tone of the profession, satisfy a public demand, and confer a noble charity.

I would also call your attention to the necessity of supporting our journals. You cannot afford to do without them, and pretend to keep pace with the progress of the time.

The superior literary and scientific tone which increasingly characterizes them, makes them a *necessity* to every man who would not be left in the darkness of historic gone-byes. I know how disinclined men are, who are engaged in the exhaustive labors of a hard professional life, to devote the

time necessary to wade through and digest the heavy matters of *text-books*, however instructive; but who might from our journals and periodicals, gather much useful and practical knowledge. Coming as they do, from month to month, filled with the gist of the *fresh present*, in short pointed articles, they supply a want, and make fertile many an otherwise waste place.

In other ways, gentlemen, you may benefit yourselves and the people with whom you associate. Form private local societies, where three or more can come together once a month or oftener, and discuss the present questions of the hour; compare notes and modes of practice; *forget that you are rivals*, and come nearer each other on social planes. Keep record of your daily professional observations, and learn to be *minute* and *close* in their analysis. Write down your best thoughts; review, compare, combine, and build them into structures of use, and you will be astonished at results. More valuable thoughts are lost every day than are penned, even by those best trained to pursue and arrest these fugitives.

Gentlemen, I have to announce that Drs. J. B. Beers and D. J. Nis, formerly members of this Association, are dead.

Josiah Bacon, of Boston, Mass., Treasurer of the Goodyear Dental Vulcanite Co., was introduced to the Association by President Knowles. Mr. B. made some very pleasing remarks, and spoke of his "peculiar relation" to the dental profession.

Dr. Plomteaux, Chairman of the Legislative Committee, reported that the Hon. F. S. Freeman, of Yolo County, presented, during the last session of our Legislature, a bill "to Regulate the Practice of Dentistry," similar to the law now in force in the State of Ohio. The bill was appropriately referred to a committee of the Assembly, and reported back, with a recommendation for its passage. Learning that considerable opposition was being manifested by members of

the profession outside of our Association, and owing to the failure in the attempted organization of a Dental College, your committee deemed the matter rather premature, and made no efforts to secure the passage of the bill, believing that after the organization of a Dental College in the State we can secure the passage of an Act that will in every way prove a blessing to the public and a credit to the dental profession.

The report was accepted and the committee discharged.

R. F. Ralls, D.D.S., of San Francisco, applied for and was elected to membership.

Dr. W. B. McAllister was admitted to membership.

Drs. Dutch, Winter and Knox were appointed to report resolutions relative to the death of deceased members, Drs. Beers and Nis.

The following report was read, from the Publication Committee:

Officers and Members of the California State Dental Association.

GENTLEMEN: We herewith submit a report of the business transacted by us on your behalf, during the past year.

We have had printed five hundred copies of the Constitution, By-laws, Code of Ethics, etc., at a cost of $36 50.

Said amount has been paid by our Treasurer, for which amount he holds the proper vouchers.

We have also had published three hundred copies of the Transactions of the Association, containing a summary of the proceedings of 1870, 71–2, and full proceedings of 1873.

We deemed it expedient to request payment for all copies issued, at the following rates: Paper, $1; cloth, $1 50; sheep, $2; and are pleased to be able to announce that the members, generally, cheerfully responded to said demand.

We would especially mention those members who so kindly made the loan of from $25 to $50 each, to enable the com-

mittee to liquidate the indebtedness of the Association for the printing of said Transactions.

The following is a statement of Tranactions' account to the commencement of the present session:

California State Dental Association,

To Publication Committee, Dr.

To Printing bill	$381 75	
" Incidental expenses	86 75	
		$468 50

Cr.

By sales of Transactions to date	$111 00
" amount received for advertisements	120 00
Balance due	237 50
	$ 468 50

Accompanying this report is a correct exhibit of books on hand, and all matters pertaining to our labors on your behalf, all of which is respectfully submitted.

C. C. Knowles,
H. J. Plomteaux,
H. E. Knox,
} Publication Committee.

Referred to Executive Committee.

Executive Committee instructed to examine and report on the books of Treasurer and Secretary, at their earliest convenience.

As none of the Essayists or Standing Committees were ready to report, the President invited voluntary remarks on any subject pertaining to Dentistry.

Dr. Younger reported a case of hemorrhage, before and after extraction: "About twelve days previous to the hemorrhage, extracted a double and diagnosed another root from the appearance of the gum. Twelve days after, hemorrhage set in where the remaining root was, and three surgeons failed to allay it by any means other than com-

presses. A few days after he called on me and I extracted the root, very little hemorrhage ensuing. The patient was discharged; but soon returned, with his handkerchief stuffed into his mouth, and his teeth closed upon it, to keep himself from bleeding to death before reaching the office. Applied a crystal of alum, in the shape like the root last extracted, pressed firmly into the socket. This remedy I recommended to this Association, several years ago, and to the local society more recently. The alum acts in three ways—first, by its astringency, producing strictures of the blood vessels; secondly, by coagulating the blood at the mouths of those vessels; and thirdly, it acts mechanically as a compress. I have never yet failed in suppressing hemorrahage, by the use of crystals of alum, no matter how severe the case was. In the above case the flow of blood had entirely ceased within ten minutes after the application."

President Knowles—Such items are of great value to us. In an emergency, a thing of that kind may save life and prevent a great deal of trouble.

Dr. Prather reported several cases of hemorrhage, after extraction: "Usually occurred when abscessed teeth had been extracted. One afternoon, about four years ago, extracted for a lady, adjoining inferior first and second molar and denssapientia. About twelve hours after I was called to see the patient, and was told that she was about to die from excessive hemorrhage. Found her too weak to stand alone. Used several styptics, with no success; finally applied persulphate of iron, on cotton, to the three sockets. After the second application, discovered the socket from which the blood was flowing; made a pledget of flax and cotton, similar to the fang; rolled it in the iron, and pressed firmly down in the socket—the application was entirely successful. Have been successful in several other similar cases, by making the same applications as above described. The hemorrhage was arterial, as unmistakably indicated by the jets following the pulsations in their exit.

Dr. Younger—In the case I related, Munsell salts had been applied, on pledgets of cotton, forced into the socket. The bleeding seemed to come from the edge of the alveolar process—between it and the gums—and was arterial blood, because it followed the pulsations of the heart. There was no ulceration ; but considerable congestion of the gums and periosteum. Seemingly, the congestion had been of such long standing that the tone of the blood vessels surrounding the socket was entirely destroyed.

Dr. Knowles—There may be a case where the blood comes out, as it would from an artery, on account of the action of an artery in the immediate vicinity. I have seen such cases, that at first deceived me, when the blood was venous.

Dr. Younger—Still the color would make it plain.

Dr. Winter—This alum plug is something new to me. I never heard of it before. I have seen cases where surgeons had great difficulty in stopping blood. I recollect a case in Cincinnati, about the year 1840, where a lady died from hemorrhage, following the extraction of a tooth. The old medical faculty of Cincinnati tried everything, and even put her into a tub of ice and froze her, and tried many other experiments. They all failed, and she died. I think if this remedy had then been known and used she would have been saved.

Dr. Knowles—I have known of the use of alum for more than twenty years—sometimes in uterine hemorrhage ; but never heard of its being used in the connection mentioned by Dr. Younger. Do not think, however, that it has been used in general practice.

Dr. Younger—Prof. R. Beverly Cole claims to have originated its use in uterine hemorrhage, in the solid form, and the London *Lancet* credits him as the originator.

Dr. Knowles—That must be wrong, because I know it

has been used for stopping hemorrhage before. Dr. Younger is the first to call my attention to it, as a hemostatic in dentistry.

Dr. Cutlar—It has been recommended by another doctor—pulverized alum, applied on a piece of cotton—and plugging the alveolus with it.

Dr. Younger—Mine is different from that; it is a crystal, shaped to fit the socket.

Dr. Knowles—Had a case, brought me by a physician, a good many years ago, where the patient had been in a drunken row, and had three of his front teeth knocked out with a bottle, cutting through the lip. The physician had tried every means he knew of, without effect. I succeeded in effectually suppressing the hemorrhage by applying the etherial extract of ergot, concentrated—nearly as thick as thin molasses—and it acted instantly. Have always found it an excellent hemostatic.

SIX-YEAR MOLARS.

Dr. Younger—I would like to ask what is the practice of the profession in regard to six-year molars, that are badly decayed. How many save them—for what reasons; and how many sacrifice them, and for what reasons?

President Knowles—Well, Doctor, perhaps if you will put a lever under that question, and elevate it slightly, some may help lift. We should be glad to hear from you, or any other gentleman, on that matter.

Dr. Younger—The only trouble, Mr. President, is, I cannot think on my feet. While it is always difficult for me to speak, when I am not prepared the difficulty is always very much increased. In conversation with a gentleman of the Association, some time ago, he told me his practice was always to remove the six-year molars if they were in any way badly decayed. I inquired, and found quite a number did

the same thing. To my mind that is very bad practice. I think there are few things a dentist can do, the evil results of which would be greater than the extraction of these six-year molars when they can possibly be saved, because you will find in a mouth where these teeth have been extracted, that the second molars tilt forward, and consequently do not articulate with their antagonistic molars with the same perfection that it would have done, had the first molars been saved. By extracting the first molar you will not only destroy its grinding ability—and that tooth possibly presents a larger surface than any other—but you also destroy one-half of the masticating surface of the second molar, which, in the ordinary mouth, amounts to say from an inch to an inch and a quarter. Now, there is not but about two inches of masticating surface on either side of the jaw, and when you take away an inch and a quarter, you can see the evil results of extracting the first molar. Again, when the first molars are extracted the articulation is awkward. Instead of the lower incisors just resting against the lingual surface of the upper incisors, we find the bite is lessened, and they press against the upper incisors, often causing a separation or loosening of those teeth in their sockets, or cutting a groove through the enamel. Therefore I believe that it is the dentist's duty to save the six-year molar, whenever it is in his power to do so, and extraction should always be a *dernier ressort.*

Dr. Prather—I fully concur with Dr. Younger in the remarks he has made, and my attention was forcibly called to this subject within the past week, having had a case, in relation to which I could not better describe the result of having lost the six-year-old molar than Dr. Younger has already done, except the front teeth were not spread ; but they were worn to thin edges from the inside—the upper ones—while the lower were ground down nearly to the edge of the gum. The second molar was tilted forward, the crown almost touching the neck of the second bicuspid, showing that the articulation, or the force in mastica-

tion, had only touched one corner of the crown. Each of the under molars were in that condition, while the upper molars were intact, and the wisdom tooth had been removed. The upper jaw was in much better condition than the lower.

Dr. Lane—My experience has been, that very many six-year molars are so very defficient in the lime salts, that we cannot preserve them as we would like; and yet it is very obnoxious to my feelings to sacrifice a six-year molar. I find many, and most of them, so much diseased when the child is presented to me, that they are too far gone to save them permanently. My plan is, if there is any prospect of saving the tooth for any length of time, to fill it in some shape. If I cannot put a gold filling in I make a temporary filling; but, by all means, I save the first molar, until the person attains the age of twelve or fourteen years. I find the great difficulty is, that parents are not educated on this matter, and they apply too late. I think that if we could issue some appeal to the people, that would lead them to think on this subject, and employ the services of a dentist earlier, with regard to their children, it would be certainly serving the public to a very great extent.

Dr. Winter—In regard to six-year molars, there are cases where I find that the teeth are very large, and the jaws are small and contracted; and where I ascertain very readily that there are going to be too many teeth in the mouth, we have got to sacrifice some of them, in order to get the rest of them in the head straight, without any irregularities. In such cases I extract six-year molars; but in other cases, where I find I can, I save them by all means. I keep them say until the second molars are cut, and the jaw developed; then if they are in a condition that they cannot remain, by reason of disease, I remove them. If I find they are not serviceable, I remove them; but I keep them there, under all circumstances, until the jaw is developed, and the child's jaw is as large as it will ever get.

Then, again, we find cases where patients are not able to pay the fee for filling these molars with gold. In such cases, I fill them with something that is cheaper, to keep them there until the second molars are cut, and probably in a few years they will be in better circumstances, as they can have this cheap filling taken out, and the tooth permanently filled with gold.

Dr. Younger—Don't you think, in such a case as that, you could send them to some dentist whose time is not so valuable as yours? There are plenty of dentists, whose time is not worth so much as yours, and who could afford to put in a good gold filling, where you could not. Now, wouldn't it be better to send those cases over to them? That has been my practice, to recommend them to some dentist whose time was not so valuable as mine.

Dr. Winter—When I cannot afford to do it, I of course always send to those operators who have lately come to our city, and whose time is not so valuable. They will be very well satisfied to do such work at the lowest price, because they are not in large practice. I think that is a good idea, and that it ought always to be carried out.

President Knowles—That is on the theory that the less a man has to do, the less he must take for the little he does. [Merriment.] That is a poor plan.

Dr. Younger—Now I don't think it is a poor plan.

Dr. Winter—I wouldn't put it that way, Mr. President. A brother will come to this city—say from the East; he is not acquainted, and finds it difficult to get work, and if he has a professional brother here who will send him something to do, even of cheap work, it will be a great help to him. I have seen the time when I was very happy to make $3 or $5 a day. I was "busted" here once, down to the bed-rock, and I was much obliged to any of the profession who would send me almost any kind of work.

Dr. Roberts—I would like to ask Dr. Younger, to what age he would prefer to let six-year-old molars remain, before extraction? He was not quite sufficiently explicit about that, in case they must be extracted.

Dr. Younger—If I find I cannot save the tooth—if it is badly ulcerated, and the enamel and bone substance is so poor that it will not last more than a year or two, I pull the tooth out immediately, so that the second molar, when it comes up, may take its place in a perpendicular position. For instance, if a six-year-old tooth shows a want of firmness in the osseous material, and it is patent that the child cannot retain it until the period of puberty, I usually extract them; but those cases are so exceedingly rare, that I think you can usually save these teeth for life. One objection I have to extraction is this: that the second molar is pushed up for the purpose of enabling the child to masticate its food. It usually comes at a time when it cannot masticate its foods well; and to do the mastication while the temporary molars are being destroyed, prior to the eruption of the bicuspids underneath them. Now, if you notice in a child from eight to ten, the temporary molars are not in a condition to do hard work, as a rule; and the first molar then takes upon itself the duty of masticating hard substances. Now, if we take out the first molar, and these temporary bicuspids are unable to do their work, that child cannot masticate properly, and the result is that the stomach has to do the work intended for the teeth, and the child's health is impaired. Many of you may not be so strongly impressed with the necessity of the teeth in mastication, and their importance in preventing dyspepsia, as I am. I have seen several cases in point. I remember one case that I had, where the teeth were all crooked, and the gentleman had not over a quarter of an inch of masticating surface. He had the most crooked set of teeth I have ever seen; and, another thing, those that were not crooked were too short. The bicuspids did not touch by a sixteenth of an inch; the first

molars did not touch, the second molars touched on their posterior cusps merely; then the only teeth that touched were turned around, so that their sides were presented to the front of the mouth. The gentleman had been troubled with dyspepsia for many years. Medicines had been administered, without effect, and his life was a burden. One day he came up to have a tooth extracted, and I advised him to have it filled, which he did. I advised him then to have his teeth straightened, and cut down, so that he could chew. I told him I thought his dyspepsia was caused by his inability to chew his food properly. He thought the experiment well worth trying. I regulated his teeth; I cut down the wisdom tooth, and cut off a part of the enamel of the cusps—so I gave him, in the course of about two months, two inches of chewing surface. From the time he acquired the ability to masticate, his dyspepsia left him; and by the time I was entirely through with him, he hadn't a symptom of dyspepsia. He went off happy, but forgot the caution I had given him. In about a year and a half he returned. A good many of his teeth had become crooked again. He had got back to about an inch of chewing surface. The result was he had more dyspepsia; and on placing the teeth in a proper position, the dyspepsia vanished again, and he has not had it for the last three years.

Dr. Roberts—In this case, Doctor, could you not have removed, with better advantage, the wisdom tooth, and dressed down the incisors so as to have got still more grinding surface on the second molars?

Dr. Younger—That occurred to me; but I thought I could retain the wisdom tooth by cutting down the enamel, and add of course to its chewing surface.

Dr. Roberts—Were the second molars antagonistic?

Dr. Younger—The second molars were antagonistic, and the bicuspids also. Had they not been, I would have extracted the wisdom tooth.

Dr. Roberts—I think we would be pleased to hear from

Dr. Crosette—his long experience would furnish some information.

Dr. Crosette—Gentlemen, I am very sorry to have you call on me. I have not been in practice for a number of years past—have done very little occasionally, when a job would come in, for some friend of mine. I am pleased with the course this discussion has taken. In the first place, it seems to me that the removal of the six-year-old molars is contrary to the laws of Nature. Nature is our best guide, and it has sent forward these teeth for the purpose of expanding and throwing out and giving fullness to the jaw, causing that perfect formation of the face we see at mature age. The idea presented, that the material from which the teeth are constructed at so early a time in life does not give a sufficient substance, seems to me to be without good reason. We all know very well, that at six years of age the incisors—which we expect to last as long as any teeth we have—are preparing to cut through, and in a little time they will be through. If they receive sufficient of this substance, why not the first molars? I want to hear this subject discussed that Dr. Roberts suggests. It appears to me it would have been a reasonable course for our friend here to have removed those wisdom teeth, as they are called. I have often seen the necessity of removing them because of elongation; that was my practice some years ago. I am doing so little business at the present time, that I am not the one to give you information. I have no special case I can present.

Dr. Younger—I do not see what is to be gained by extracting the wisdom teeth. The point I was aiming at was, to give the gentleman all the masticating surface possible. Now, if I had extracted those teeth, I would have deprived him of about half an inch square of good masticating surface; and those wisdom teeth happened to be the strongest he had in his head, because they were more antagonistic.

Dr. Crossette—Diseased teeth?

Dr. Younger—No; not diseased teeth—ordinary teeth. The wisdom teeth were remarkably strong.

Dr. Roberts—I would like to ask Dr. Winter, why he advocates leaving six-year molars in until the second molars are cut?

Dr. Winter—I want to leave them in—leave the roots there—to let the jaw develop properly, which it will not do if they are taken out too soon. If extracted too soon, the second molar is drawn forward, disfiguring the shape of the under jaw; and when the child gets to maturity it has a disfigured face. For that reason, I leave them in until the second molar is cut, the face being then at its full size, and the child having got its growth; if they are a detriment to the mouth, then I remove them.

Dr. Roberts—I have discovered that in the extraction of six-year molars at too early an age, the mouth becomes possibly too small or contracted; but, after all, allows the second molar to come through almost perpendicularly with the face, fairly antagonizing with the upper molar. If allowed to remain in, or if the six-year molar is extracted after the second molar is cut—say six months or a year after—the inclination of the second molar is to fall over; whereas if the six-year molar is extracted six months before the cutting of the second molar, the inclination is a lateral growth of the molar with the fangs, carrying it along level with the first teeth. At the time it is cut, it is cut with almost a level top. If the gentlemen present have not found that to be the case in their experience, I would like to hear from them; it has been so in my experience.

Dr. Winter—I found that if you allowed the first molar to remain until the second molar is cut, and it comes up straight, the alveolus is formed properly. You then take out the roots of the six-year molar, and the tooth is less liable to tilt than if you took the roots out before the other was cut.

Dr. Prather—I would corroborate the statement of Dr.

Winter; and as proof of it, I have brought a case that I can exhibit. [Exhibiting his own mouth.] Here is a twelve-year molar. The six-year molar was removed 29 years ago. The other molar stands as true as any tooth, and you can almost invariably, on looking at the mouth, tell at what age the six-year molar has been removed. If it was removed when the person was quite young, the twelve-year molar leans forward. If the six-year molar be allowed to remain until this twelve-year molar is well developed, and fully up in its proper place, you can then remove the six-year molar without so much detriment. That is my experience, and my judgment.

Dr. Roberts—How much space was there between your second bicuspid and second molar? Evidently, if the six-year molar had been removed before the cutting of the second molar, there now would have been no space there at all.

Dr. Crosette—Since I have gone into this discussion somewhat, I want to ask the gentlemen, if a brick is as likely to keep in a position when the mortar is green, as it would be if the mortar was fully set. To illustrate my question: It appears to me, that the removal of teeth any time before the full set is formed, is disadvantageous. If it can be kept in until that time, and then removed, it seems to me there is no difficulty, because then the tooth has received sufficient substance, and the structure surrounding it is sufficiently strong to hold the new tooth in position. But if a tooth has passed through—the second molar standing there—and the person is quite young, and the bones are soft and flexible, there is no difficulty, if the six-year molar is removed, about the teeth pitching forward. However, where it has been left in until 14 or 16 years of age, I do not know as I have a recollection of any case where the tooth has pitched forward. The difficulty is that it is taken out too soon; they are taken out before the mouth is fully developed.

Dr. Winter—I must say this is a very interesting subject

to me. I always, when possible, direct parents' attention to their children's teeth, pointing out the six-year molars, telling them they are the most important teeth in the head; that they are cut at a certain age, and that they are standard-bearers; they grow straight, as the balance of the teeth are to conform to those, front and back. I always inform them of the importance of keeping those teeth well brushed, and to preserve them, under all circumstances, and keep them there until the face is fully developed, and the second molars cut—in fact, all the teeth cut. I then remove them, if necessary.

Dr. Roberts—At this stage of the question there is not much room for controversy; but the next question is, the condition of the six-year molar, when it is possible to retain it. I think that part of the question quite as important as the other. I think all will acquiesce with Dr. Winter, in the position that it should be preserved when it is possible; and I think there is no operator here who will not do so. But at what condition of decay, and what degree of decay, is it possible to preserve the six-year molar? Dr. Younger just merely hinted at this subject, and if he had continued it a little further it would have been very interesting.

Dr. Winter—I would state, to carry this matter a little further, that my mode of practice for the last few years has been this: We have been almost exclusively saving the nerves when they are exposed. Previous to that I had been in the habit of removing nerves, until we commenced covering the nerves up with os artificial and creosote. I put that over the nerve, even if the nerve is bleeding, wiping the blood off carefully, and then laying over the nerve that thin coating, mixed with creosote; let a few minutes elapse, and then mix up some of this os artificial—put that in, and let it remain twenty-four hours to three weeks, just as the case may require; then cut that out, leaving the bridge over the nerve cavity, fill over that, and complete the filling. The first information of an operation of that kind, I got from a

gentleman in Tennessee, whose name I forget. He was the originator of it. I put the preparation over the tooth, with the expectation that it was going to ache, and that I would have to remove it, and have to take the whole filling out; but in two weeks after the operation the patient came in, and the filling was made over this bridge I have described. It was the case of a Chinaman. I have seen him almost every day, and know the operation was successful, and that he has got a good tooth. I saved the nerves by covering them with this bone filling.

Dr. Younger—What was the condition of the pulp, in the case you have related?

Dr. Winter—A part of it had sloughed off. That was cleansed. After the operation, we expected the tooth would ache. We performed the operation as an experiment, more than anything else.

President Knowles—Conservative surgery is taking very deep hold on the world; and I believe Dr. Winter is not the only man who claims to preserve the remains of nerves, where they not only have been exposed, but subject to large sloughing.

Dr. Winter—I do not take the credit of it. It was Dr. Warner.

President Knowles—A certain doctor has said, a man was a barbarian who would sacrifice a nerve, or part of a nerve, if it could be saved.

Dr. Winter—In the last two years I have succeeded more in saving nerves than I thought possible.

Dr. Lane—I would like to ask Dr. Winter, if he has had a good opportunity of testing in any way those nerves he has covered up and saved. I do believe in saving the pulp when I can, but have doubts about saving a portion of it; and I would like to ask, if the remaining portion of the nerve does not often die, even if there is no pain?

Dr. Winter—I would state that it is possible in all those cases where the nerve is partially gone, and so badly diseased; but it is an every day occurrence, at my office, to meet with nerves which are bleeding. When we meet with nerves that are badly decayed we take all the decay out, and if they bleed we carefully wipe the blood off and cleanse the place. Then we mix some os artificial with creosote, and put a layer of it over the nerve cavity. It has to be nicely done. As to the cases I have had, if there were any difficulty with them I should have heard of it. There is no difficulty, so far as I have heard, and I have watched them carefully. How long they are going to last is a question—time will tell. They have been doing well so far, and I am well pleased with the mode of operating.

Dr. Lane—I perfectly understand the mode of treatment, as previously described by Dr. Winter, and I presume all of us have had experience in saving nerves which bled to the touch. But where the nerve has sloughed a part of the way —where gangrene has set in, and destroyed a portion of it— I cannot understand on what principle the rest of the nerve can be saved, and my experience contradicts the assertion.

Dr. Winter—I stated that the case I have mentioned was the only one in which we had operated that way. That is the case of the Chinaman I spoke of. His tooth is doing well, and the nerve is yet alive.

Dr. Sichel—How long is it since the operation was performed?

Dr. Winter—Eight or nine months.

Dr. Dutch—I have nothing particular to say on the subject of the extraction of six-year molars. I have heard a good deal said about it. I make it a rule to save all the teeth I can—I use my judgment. I do not set down any strict rule, and say I will extract this tooth at such a time, and I will not do it at any other time. I look at the struc-

ture of the jaw, and the child, and the surroundings, and everything. I take them all into consideration. I would hold that one practice was equally as good as the other—that is, taking the six-year molar as soon as I could in one case, while in another case I would insist on keeping the roots there, just because I see there is a want of development in the jaw. It has been said, that a tooth with no bearing on it when it is erupting, is going to tip over. I cannot understand why it is going to tip over. The natural tendency would be of that tooth to slide over itself, and come in an upright position; but if you had it half developed, then I should say there would be some danger of tipping—so I would vary my practice in those cases. I do not always follow a set rule. I do not think it is good practice. What would be good practice in one patient's mouth, would be bad in another. For instance, we see we cannot save a tooth, the structure being of such a character that the patient is bound to lose it; then in another case, we may see a tooth with no more substance, but of a different character, where there would be some hope of saving it. I would change my practice in the two cases—I would extract one, where I would save the other. My practice is eclectic in that respect. I do what I think in my judgment is best for the patient. I save the tooth, in all cases where it is possible.

The President announced that Dr. Warner would clinnic at Dr. Winter's office, at 1 o'clock, P. M.; and Dr. Cutlar, at his office, at 1:30 P. M. to-morrow. Also, Dr. Dutch, at his office, 8:30 A. M. next day.

Adjourned to meet at Y.M.C.A. Hall, at 7:30 o'clock, P.M.

FIRST DAY—EVENING SESSION.

Convened at 7:45 P. M., President Knowles in the chair.

Roll called, and minutes of afternoon session read and approved.

S. E. Goe, D.D.S., of San Francisco, signed the Constitution, and was introduced as a member.

The following articles of impeachment were read, and referred to Drs. Cutlar, Crossett, Kingsbury, Dennis and McCowen:

SAN FRANCISCO, June 9th, 1874.

California State Dental Association—

GENTLEMEN: We hereby charge T. H. Ferguson, D.D.S., with having violated the provisions of Article II Section 3 of the Code of Dental Ethics, and request the appointment of a committee to investigate the same.

S. E. KNOWLES.
WM. DUTCH.
H J. PLOMTEAUX.

Dr. Cutlar, Chairman of Committee on Dental Chemistry, read the following

REPORT ON "DENTAL CHEMISTRY."

Mr. President and Gentlemen of the California State Dental Association: As one of the committee on Dental Chemistry, appointed at the last annual session, I feel that I have a duty assigned me from which I would gladly have been excused, from my inability to submit such a report as shall be acceptable to this Association, and commensurate with the importance of the subject in its application to dental practice. There is no branch of science, perhaps, which should rank higher in the estimation of those who truly appreciate the relation which Dental Chemistry bears to our speciality; and it has been wisely deemed an eminently appropriate subject to be brought before the deliberations of this body. I regret that I am unable to bring to your notice any very recent developments known to us, in this special department of knowledge, beyond what has been given to the profession in the many valuable works which have enriched us with their discoveries, pertaining to the Chemistry of the mouth.

Imperfect as the present knowledge is, of what is termed Dental Chemistry, enough has already been determined, however, to give the intelligent practitioner some insight into the true causes of decay, as affecting the dental organs.

In reality, what knowledge we have of these organs is based upon the investigations of Chemical Science, which has explored the mysteries of their beautiful structure, and analyzed them into the original proximate elements of which they are composed. It has extended its inquiries even further, and deduced many valuable facts concerning the chemical relation which the teeth bear to the substances and fluids of the mouth. While a pathological condition of these organs may be entirely organic, that is dependent on some abnormal change in their chemical constituents, there is no doubt that other chemical agencies are brought to bear upon them, which may have an injurious and destructive tendency. Among these may be mentioned the saliva; the secretions of the mucous membrane; food, and other substances taken into the mouth; and also certain disordered conditions arising in some of the processes of digestion. All of these may have either a direct or indirect action upon the dental structure; and they comprise some of the most important subjects which come within the province of Dental Chemistry, and are sufficient in themselves, I think, to give the study a very material bearing upon our daily practice. In analyzing the several structures of the teeth, chemists have found they contain both animal and earthy matter, existing in certain different proportions. The most exact analyses which have been made, up to the present time, show that the *dentine* contains of organic matter, something more than 28 per cent.; of earthy or inorganic matter, over 71 per cent. The great preponderance of the inorganic compounds in the *enamel*, is manifest in its containing over 96 per cent. of the latter, against a little less than 4 per cent. of organic matter. The strong resemblance between the structure of dentine and cementum, is demonstrated by a comparison of their chemical constituents, which shows

their structure to be almost identical—the only difference being in the cementum containing less inorganic, and more organic or animal matter. These compounds, which unite to form the dental structures, are capable of being resolved further into their original elements or constituents. So, also, can the saliva and the other chemical substances of the mouth, showing the character of the elements entering into their formation, with such existing abnormal or morbid changes as may exert an influence upon the dental structure. But this would carry the discussion beyond the limits of the present report, and, perhaps worse, beyond the limits of your patience. In conclusion, let me ask for this department of science, a renewed and increased interest in the study and investigation of its untold mines of wealth to the studious observer, in affording abundant materials for discovering and establishing the true laws of *disease*, as yet but imperfectly known in their application to the ills of the human family. And not among the least are those belonging to our field of practice. When these at length become more clearly defined, and their results given to science, then, indeed, shall "the generations yet to come, rise up and call us blessed."

R. Cutlar, D.D.S.

Dr. Lundborg, Chairman of the Advisory Committee, read a report on matters relative to a Dental College. Report made special order for 10:30 A. M. to-morrow.

Dr. Lane—[Exhibiting a piece of carious bone that he had extracted from the inferior maxillary of a patient that had been afflicted with some venereal disease.] Considerable pus oozing from the gums, from second right inferior molar to left lateral incisor, threatening loss of the whole process and teeth. Piece exhibited, removed from where the second molar had been. Would like to know the proper treatment of such a case?

Dr. Younger—I recently had a very interesting case of exfoliation of bone. Removed a piece about an inch long,

and half-an-inch wide, involving the alveolus and part of the superior maxillary bone ; removed several smaller pieces of superior maxillary. Have another case where the disease attacked the palate, and removed a portion of that. I treated it by removing the bone, and applying diluted sulphuric acid, applied with a fine platina syringe, forcing it up between the teeth that had been involved. These cases were the result of ulceration. Removed a portion of the palate, that was separated from the base of the nose simply by the membrane. Treated that with sulphuric acid first, then with nitric acid and iodine. Used first of all, common sulphate of iron ; then a gargle of chloride of iron. Treated the cases surgically ; was successful in the cases mentioned. I believe the ulceration and the infiltration of pus into the alveolar process caused disorganization, and death of the whole structure. May have been some peculiar diathesis. Patient assured me he had never had any venereal disease, but had been strong and healthy all his life.

Dr. Birge—Have had similar cases. One caused by a fracture of the alveolus when extracting a tooth. Removed exfoliated bone, and successfully treated with weak solution of chloride of zinc.

Dr. Dutch—In reply to Dr. Lane, will say that I would have removed all the necrosed bone, and referred the patient to some skilled physician for constitutional treatment. Do not think myself skilled enough to treat a well-defined case of syphilis, hence would refer him to those that were. Cannot always rely on the statement of our patients, as regards their never having had syphilis. Have known cases where physicians had been deceived by their statements.

Dr. Bunnel—Do not believe that all such cases are the result of syphilitic affection ; but a large majority are from that, and perhaps, mercurial affection combined. I may safely say that all cases that have come under my observation have been the result of syphilis.

Dr. Younger—I do not think syphilis is necessarily the cause of such troubles. The action of mercury may induce it on the process. I wish to say that in all severe cases of alveolar abscess I use sulphuric acid, by injection.

Dr. Dutch—I heard a gentleman near me inquire how you applied it.

Dr. Younger—I, of course, have the opening to the abscess well established; then I take a little piece of cotton, and dip it in the sulphuric acid; or sometimes, for the purpose of enabling the cotton to take up the acid perfectly, I dip it in water first, then press the water out, and dip it in the acid, so as to be sure that it takes up the acid; then I carry it up into the abscess itself, which is right to the root, and let it remain there for a few minutes; then take it out, and, in the course of a minute or two, I inject either a solution of ammonia or bi-carbonate of soda.

President Knowles—Do you think so heroic an application as that necessary for simple abscess?

Dr. Younger—Yes, sir. I have seen cases where these obstinate abscesses or ulcers would not yield to iodine or nitric acid or carbolic acid, and you have to make a strong impression. Sulphuric acid will destroy any necrosed bone there may be there, and will certainly make quite an impression on the parts—I mean the diseased parts.

President Knowles—I should think it would.

Dr. Younger—I remember one case I treated for fourteen months, in the usual way, with distinguished failure; and two applications of the strong acid effected a cure. It has been now two years since I put in the application, and from the appearance of the gum, and other evidence, it is just as good as any other tooth the person has.

Dr. Dennis—Suppose you cannot make that application to the root?

Dr. Younger—Where the abscess is not broken on the outside, I find it difficult to cure. I put it through the gum in such cases, and drop the acid right on the root. It is a little lively for the patient, and is marvelously effective.

Dr. Dutch—I have been using sulphuric acid in a little milder form. I have found I can be successful in the majority of cases with aromatic sulphuric acid, and I have to use that very frequently. Sometimes long-standing cases give a great deal of trouble, and will not succumb to the ordinary treatment. I have a case now under treatment of a young man, in which I used iodine at first; then made one or two injections of aromatic sulphuric acid, let it rest for eight or ten days, and then went back to the iodine treatment. I have never had any trouble in keeping the sulphuric acid from getting into the mouth. I take a piece of punk, and lay it on the gum, so as to dry it, and keep the acid from running. Then, when I insert the tube, after getting it at the place where I want it, I lay the punk over the orifice. Then I force the piston, till I find no more of the liquid can get in, and I know the sack is full. I take out the tube, and keep the punk lying there, and it absorbs the excess of acid. Then I take away the punk, raising it gradually, so that all the acid which comes from the orifice, will be taken up by the punk. That is the way I have done lately, and I find I do not get any acid in the mouth. As a precautionary method, however, I have some bi-carbonate of soda in a glass, and tell the patient to rinse his mouth with it afterwards.

Dr. Younger—I had to apply sulphuric acid yesterday, in an obstinate case, where a good deal of the alveolar process was involved, and also a good deal of the maxillary bone. I could pass the probe from the gum away into the alveolar process. I took the rubber dam, and fitted it to all the teeth on that side of the jaw. Then I used cotton saturated with bi-carbonate of soda. I had the whole place dammed up. Then I put in the injection. There was overflow, but not a particle of damage to the teeth. I had a solution of bi-

carbonate of soda, and as soon as I got through, I applied that, not within the gum, because I wished the acid to exercise its full force on the diseased structure.

Dr. Dennis—I would like to ask Dr. Younger what his theory is in the application of sulphuric acid.

Dr. Younger—My theory is, first, that if it meets any diseased bone it will dissolve it; and in the second place, that it has a tendency to awaken new life or feeling in the diseased tissue.

Dr. Dennis—Would not some milder application—for instance, sulphate of zinc—answer the purpose?

Dr. Younger—I think it would not be powerful enough. I am getting tired of having to wait a year or more to accomplish a result which might be accomplished in a few weeks.

Dr. Dennis—Do you depend entirely on the acid?

Dr. Younger—Almost entirely. When I think the acid has exerted its force, I use iodine. I also use iodine as a counter irritant.

Dr. Dennis—Acting on the lime or tissue?

Dr. Younger—On the lime, and also on the soft tissues.

President Knowles—I think it is not the general practice in the profession, at the present time, to use so strong an acid as Dr. Younger has referred to. I have never used it so strong; but I do not know in regard to it. Practical demonstrations are what we must depend upon in our practice, and I am glad to hear that some are venturesome enough to make them.

Dr. Dennis—I think we know and have positive knowledge that dead bone justifies the use of sulphuric acid, because we want to get rid of the dead bone. If there is no dead bone

there—if there is a dead tooth, the sulphuric acid must act on the lime in the tooth. If there is not any organic matter, the acid must act on the lime of the tooth, if it does not act on the lime of the process. If the process were entirely healthy, and the tooth were dead, the application of sulphuric acid must be injurious to the dead tooth. Of course, if the tooth were living it would not be so destructive.

Dr. Younger—If it be perfectly dead, the acid will act more quickly on it than if it were living, because if it be living, there is a substance which will resist, whereas in dead bone there is less of organic matter—less gelatine, to prevent the action of the acid; so the acid selects what is dead, in preference to what is alive. Of course, I do not keep the thing saturated with acid perpetually—perhaps in an application, I would not put in more than one or two drops; but I have to use my judgment. If I think there is a great deal of dead bone, I use more; if I think there is only a little, I may use only a very little of the pure acid, or I dilute the acid. All those things have to be done with judgment.

Dr. Dennis—I think that judgment and conscience, in the practice of dentistry, is the sheet anchor of success. We must exercise judgment in the application of these remedies, and know what is necessary in each case. As to sulphuric acid, we should know its effects on the live and dead tissue—we ought to know what we are applying it for. We know sulphate of zinc is used very much in the treatment of ulcers; but, at the same time, there is but a very little judgment exercised in the application of it and other remedies. I think we should try and get at the theory of the action of these remedies, and not apply them merely because others have done so.

President Knowles—Scientifically understanding a thing has a great advantage over blind empiricism.

Dr. S. E. Knowles—I think that during the discussion of

this matter the action of sulphuric acid on the soft tissues, and its action upon the bone, have been mixed up a good deal. In case of simple alveolar abscess, if the sulphuric acid is admissible at all, it is merely to get up adhesive inflammation, in order to obliterate the sac—or, if you please—the hypothetical pyogenic membrane. In case of necrosis of the bone or of ulceration, and the result of pressure of this sac, sulphuric acid would be admissible for another purpose, though, of course, not perhaps the very best thing that could be used, since its appetite for the salts of lime is not so great, for instance, as hydrochloric acid or nitric acid. But in case iodine, chloride of zinc, or any of the other stimulants in common use to produce adhesive inflammation, should fail, I think sulphuric acid would be admissible for that purpose. I think in the statement made by Dr. Younger, in regard to the treatment of this abscess, it is quite likely simple alveolar abscess has been mixed up with the complication either of caries of the bone or ulceration.

Dr. Younger—I do not use sulphuric acid in every case of ulceration, but only in these obstinate cases, and in those cases where you would otherwise extract the tooth. In the past few months, I have been making a strong effort not to extract a tooth at all; and even if a root only can be saved, if it is in front of the first bicuspids, for instance, I do everything in the world to save it—because the expression of the face depends so much upon the preservation of the contour of the gum in front of the first bicuspids; and, likewise it is impossible to put in an artificial tooth where the root has been extracted, so it will look natural, where the gums are exposed. I have some cases where there are merely shells left, yet I have filled them up with cement or silver, or anything, so as to keep those roots in; then have put in the artificial work, and the teeth look natural. To my mind, there is nothing so abominable as artificial teeth, where they appear to be such; and in a great majority of instances, they will so appear, the fault arising in a great measure from

lack of judgment in putting teeth in, and also from extracting teeth, where it is perfectly impossible to put teeth that will look natural. Now, you will lose, for instance, a central or lateral or a canine tooth, and the depression that follows from the loss of that root is such that it cannot be replaced, and have that place look natural when exposed. For that reason I make every endeavor to save teeth. I have even taken the roots out and put them back.

Dr. Dennis—I think we are constantly confounding abscesses with ulcers. It is unscientific, and the quicker we put ourselves on a scientific basis the better it will be. An ulcer, I understand, is a solution of the continuity of the superficial tissue and the molecular death of the part. An abscess is quite a different thing. There cannot be, as I understand it, any such thing as an ulcerated tooth. It must be an abscessed tooth.

Dr. Younger—These terms may be, strictly speaking, incorrect; but at the same time we know what is meant by them. For instance, we are apt to call the pulp a nerve, because we have so spoken of it, from our boyhood—it is incorrect, but at the same time we know what it means. The difference between an ulcer and an abscess is, that one is on the surface and the other is hidden. An ulcer is only an abscess on the surface, and an abscess is only an ulcer within the body.

Dr. Dennis—An ulcer is supposed to be confined entirely to soft tissues, while an abscess may extend to both hard and soft tissue. What would be a good treatment for ulcer, might not be good treatment for abscess.

Adjourned to 10 o'clock A. M. to-morrow.

SECOND DAY—MORNING SESSION.

Convened at 10:15 o'clock A. M., President Knowles in the chair.

Roll called, and minutes of evening session read and approved.

J. P. Crowell, D.D.S., who had ceased membership for nonpayment of dues, was unanimously reinstated.

Dr. Barrett Beers, of San Francisco, was admitted to membership.

Hour of special order having arrived, the report from Advisory Committee was taken up, and it was moved to refer it back to the committee. After a lengthy discussion the Advisory Committee asked permission to withdraw the report.

President Knowles having vacated the chair to take part in the discussion, said—"it was evident that the report was not a proper one from our Advisory Committee, as it only reviewed their acts as Trustees of the California College of Dental Surgery, and not as a committee, in accordance with the instructions as set forth in the resolution creating it, as found on page 200 of the printed proceedings of 1873." Therefore he moved as a substitute, that the committee be permitted to withdraw their report, in accordance with their request.

Substitute adopted.

Adjourned to 2 o'clock P. M.

SECOND DAY—AFTERNOON SESSION.

Convened at 2 o'clock P. M., President Knowles in the chair.

Roll called, and minutes of morning session read and approved.

Dr. G. A. Case, of San Francisco, was elected to membership.

Dr. Dutch, Chairman of Committee on Operative Dentistry, read the following report:

Mr. President, and Gentlemen of the California State Dental Association: In attempting to make a report on Operative Dentistry, I find the field so large and varied that I am at a loss where to begin. The filling of teeth, to preserve and arrest them from decay, is one of the most important duties the dental practitioner is called upon to perform. How to faithfully execute the trust confided to us is the point that frequently taxes us to our utmost. It is surprising to see the variety of methods adopted by some of our best operators, all aiming to produce the best results; and it is to this determined effort on the part of the faithful operator, that the wonderful progress in this branch of our profession is due.

Undoubtedly the first step in filling teeth is to remove all decay (except where it will expose the pulp), and prepare the cavity, leaving the walls bold and firm, being particular to remove all friable edges, and thoroughly follow out the fissures of decay; too much importance cannot be attached to this latter point, for the failure to follow it is undoubtedly the fault of a great many, who were otherwise very nice operators.

EXPOSED PULP.

It behooves us to do all in our power to preserve the pulps of teeth, even after they have become exposed, and not destroy them the moment they are exposed, as is practiced by many. By preserving the dental pulp the teeth preserve their beauty and usefulness in a greater degree, and where we have so many means at our hand it becomes our bounden duty to use all our efforts to preserve the teeth with all the functions of life nature has endowed them with.

There have been no new forms of gold introduced to the profession since our last meeting, that I am aware of. Of the

different varieties of soft gold, Williams' cylinders and blocks seem to be the easiest manipulated; of the heavier foils I prefer his rolled crystal-surface gold. With the combination of the soft and cohesive properties of gold I think the most difficult cases may be mastered.

NEW PLUGGERS.

At the last meeting of our Association I exhibited a set of gold pointed pluggers, got up in a crude form by Dr. Chance, of Oregon. Since then the Doctor has paid us a visit, and I believe several gentlemen, through his kindness, have had an opportunity to try them. Certainly, if they have all the merits claimed for them, they should attract our attention, and I hope the gentlemen who have had an opportunity to try them will give us the benefit of their experience.

BARNUM'S RUBBER DAM.

I would earnestly recommend the members of the profession, who have not adopted the use of this most valuable appliance in Operative Dentistry, to try it, and persevere in its use, and see how much they will simplify the complications of their operations. True, it requires patience and practice to manage it, but when once mastered it is surprising how much we are relieved, and what seemed a difficult case before is made quite simple after the rubber is adjusted.

DISCUSSION.

Dr. Dutch—Looking over the vast field of Operative Dentistry, very few new appliances will be discovered. I might, however, have mentioned the Arkansas stone points, for smoothing rough enamel and grinding down fillings, leaving a beautiful surface on either. With corundum points gold fillings can be cut down more rapidly than with the burrs, and with less annoyance to the patient. Also the wooden points made by the Southworth Manufacturing Company, are very useful for polishing, as they can be used in nearly every posi-

tion desirable, polishing much closer to the gums, without lacerating them, than with any other appliance. When cut ting gold with the Arkansas stones use glycerine, and when enamel, use water to prevent clogging.

President Knowles—I noticed one point in Dr. Dutch's paper, in relation to the removal of all decayed matter excepting where the nerve was exposed. I would ask him if he designed to convey the exact idea those words would convey?

Dr. Dutch—I would not leave decay there that would impinge on the nerve; but frequently when we approach the nerve we see it is discolored. I do not think it is good practice to expose that nerve when the dentine is hard and solid enough to stand some force.

President Knowles—You would leave such matter as was partially calcified, not where there is absolute decay?

Dr. Dutch—Yes sir.

President Knowles—In those cases have you ever found an acid condition present that it would be necessary to neutralize before plugging the tooth?

Dr. Dutch—My attention has not been particularly called to such conditions. In all such cases I wash the cavity out with carbolic acid. I make that application because I think it is the last chance to purify the condition of things there.

President Knowles—Some use an alkali to neutralize any acid condition that may be present. I have seen a suggestion of that kind made in those cases to which you refer.

Dr. Prather—I would like to have the expression of the members of the society with reference to excavating proximal surfaces of the molar teeth—for instance where the decay extends near, but not entirely down to the terminus of the enamel. From the observations we have made in our practice, we think it is better if the decay approaches anywhere

near the terminus of the enamel, to remove it, forming the flooring of the cavity on a line with the cementum. It is less liable to give way at the bottom of the filling if all the enamel is removed than if there is a small line left.

Dr. Winter—That is a very nice point. Fillings of that kind give out at that point sooner than at any other. I find a great many fillings give out right there, and my practice is to cut away pretty well, and press the gum away until I can fill a little below the gum and let the gum come back and protect it; in that case there is very little danger of decay.

Dr. Plomteaux—I suppose Dr. Prather will contend, as I do, that the acid secretions work more rapidly on the enamel than on the cementum.

President Knowles—I expect in that case you would most likely find the remains of the enamel in a friable condition, and not in a normal condition. That I suppose would be the first to suggest itself. I suppose *per se* if the enamel is perfect, and it is known that the dentine is perfect, it is better constituted to resist decay than the dentine itself, or the cementum, unless you carry it below the line of acid action.

Dr. Plomteaux—If there were a very small line left there we should certainly cut below it in every instance, because there is not one patient in a hundred who pays any attention to the cleanliness of the teeth around the necks, and we find foreign matter retained there almost constantly, and the acid secretion will operate *very much more rapidly on the enamel* than it will on the *cementum.*

President Knowles—Well, I suppose it is, from the fact that the enamel is not in the normal condition; it is not perfectly polished; and then the line of union you make between the enamel and the gold is not so easily dressed down as it would be on the surface of the cementum. That is another reason, is it not?

Dr. Plomteaux—That is one reason. Another reason is,

a very little force in plugging will carry the enamel away, leaving the margin imperfect.

Dr. Winter—I have noticed where there has been a little enamel left, it may be in a normal condition when you fill the tooth, but it will not remain that way, owing to an excess of alkali or acid. The enamel becomes discolored quicker than in any other place. In some cases it will be good practice to leave some of the enamel.

President Knowles—Dr. Dutch, what is your general idea and practice in regard to proximal cavities in the front teeth? Do you fill by separating, and from the outside, or do you recommend the cutting from underneath the posterior surface?

Dr. Dutch—I invariably cut from underneath; I always aim in putting fillings into teeth to make as little exposure of them from the front as I can. I separate in such cases so that my slot will not be as large as I have seen made by others. If the cavity has a good strong palatal wall, and the other wall is thin, I separate the teeth pretty freely with wedges, and fill from the front portion, because I consider that is conservative. I do not follow any stereotyped rule in such cases; but where all the chances are equal, and where there is as much dentine on the labial as the palatal, I always cut from the palatal side.

President Knowles—I have seen a style of work by Dr. Burdell, who cut the teeth somewhat after the style of Arthur's recommendation for flat fillings. Do you adopt that method or make a compound cavity?

Dr. Dutch—I make a compound cavity in such cases. I hold that you have got to cut away too much good enamel to fill like Dr. B. The operation is sometimes simplified by making a compound filling.

President Knowles—That has been my practice for some time past.

Dr. Dennis—There is one thing I want to call the atten-

tion of the Association to, and that is Arthur's discs. I think they are only second to the rubber dam in usefulness in dental practice. If a man wants to know the difference between the capability of Arthur's disc and the file, let him take a piece of porcelain and apply the disc and a file, and see which will cut the fastest. I do not know how I can express my opinion of the merit of this little thing better than to ask you to try that experiment. You will be surprised after using them for a while to see how nicely you can apply them to cases where their use would seem impossible. Another thing is, they are so easily molded; you can mold them almost as easily as putty. They are very useful for separating teeth in place of the file. It is seldom I put the old fashioned separating file on the teeth, very seldom indeed.

President Knowles—That is my own practice.

Dr. Dennis—The very first time I applied them I made up my mind they were a very great blessing to the operator, and the patient particularly, because patients in ninety-nine cases out of a hundred will prefer the disc to the file, and the disc will cut ten times as fast, to say the least. You must be careful in the use of them; you have to apply water to keep them from heating. I enjoin upon every member of this Society to arm himself with a set, if he can, before he goes away, and if he cannot get a set before he goes, let him leave an order for one—a complete set—do not leave off half-way; get a complete set. As to filling teeth, I believe I have expressed myself pretty freely on that point heretofore, and I don't know that I have changed my mind much. I condemn the exclusive use of heavy foil, and I believe, as I said before, if I were going to have but one, I should take soft foil. If a skillful operator, or an indifferent operator, were going to operate on my teeth to-morrow, and he could not use but one kind of foil, or if he could use both, I should ask him to use the soft foil in preference to the heavy every time; but I do not see, for the life of me, how a man can get along without both. It seems to me good work cannot be done without

both. I look upon heavy foil as an important auxiliary, perhaps as much so as the disc or rubber dam. I don't believe that operator lives who can take heavy gold and fill all the cavities that are presented and save the teeth. I do not believe they can make them water proof. I believe it requires a hundred times as much skill to fill the teeth with heavy foil, and make the filling perfect, as with soft gold, or soft and heavy combined. I do not believe it is possible to take heavy gold and put it into a tooth, and put that tooth under a hydraulic pressure of ink, or anything that will stain, without finding the ink all through the tooth wherever the gold has been put, or nearly so. It is a very delicate thing to take a piece of heavy foil and put it into a cavity, and complete the filling with it; but it is important in connection with soft foil. Put soft foil against the walls of the cavity and put heavy foil between.

Dr. Dutch—I would endorse what Dr. Dennis says in relation to the disc. I admit they are far superior to the file for the purposes referred to; they are much more reliable; you can always get a nice smooth surface with them; and in finishing fillings they are invaluable, especially the further you get back in the mouth. I do not think in general any filling, proximal fillings in particular, ought to be done without them. In fact I consider the corundum point in almost any place in finishing fillings very valuable. Throw the burr away first, and use the corundum all the time, because I think the corundum point is always easier for the patient, and the ease of the patient is something we should constantly consider. Dental operations are severe enough at the best, and we should be considerate of the patient's comfort as well as endeavor to save labor for ourselves.

Dr. Winter—I agree with Dr. Dutch, and also Dr. Dennis, in some particulars; in others I do not. I find some of these discs useless; they are too large, and you cannot get them in the mouth so as to do good execution with them. For instance, you want to cut away on the inside; you have to have an

assistant to keep the tongue away, and another assistant to keep the mouth open, another one to run the engine, and another one to hold it carefully. In some mouths I use the small ones, and they are the best for separating of anything I have seen introduced in dentistry; but I must say a great many of them are too large, and you cannot get them where you want them. In regard to filling I think I can put more soft gold in the same cavity than I can hard, and when I get the filling in it is well within the walls of the cavity. I believe when soft gold is properly put into a cavity the filling will be so dense that if the tooth be subjected to a hydraulic pressure of ink, none of that liquid would get into the cavity; but with hard gold it would be the reverse.

Dr. Dennis—There is only a little conflict of opinion between Dr. Winter and myself in relation to these discs. I have not yet seen any so large that I could not use them, and I have thought at times that I would like to have them a little larger; and I have not seen any so large that I could not use them entirely alone—although I confess I prefer a boy to run the engine. If I can have that, all the other auxiliaries Dr. Winter talks of I can easily get along without. Perhaps I have used them more than Dr. Winter, and devoted more attention to them. Perhaps I have not. But none that have come into the market are larger than I use every day in my practice.

Dr. Birge—I do not think it possible to use the large disc on the back teeth. You cannot get it in so as to use it to advantage.

President Knowles—I use the two varieties. I find the coarser kind very frail, and they are not of much service either. You want to get the finer kind. I use a good many of the medium and smaller sizes. I do not get them mounted, but mount them myself. The coarser kind are practically worthless—that is, the larger discs; they are too frail.

Dr. Kingsbury—I wish to say, that those members who are

in the habit of breaking these discs may repair them very easily, provided they save the pieces that are broken off; by taking a little shellac varnish, and touching both broken surfaces and laying them away, they become as serviceable as new. I have repaired several in that way, and am now using them as before.

Dr. McCowen—I would say, in addition to what Dr. Kingsbury has said, that we use the dry shellac. With a little heat you need not lay the discs away—they are ready to use as soon as they cool.

President Knowles—It requires a good deal of delicacy to get them even. I tried it; but I think I had rather not bother with them.

Dr. Coggswell—I presume you have, many of you, seen the small steel discs that look something like a circular saw. I used one of those for separating some teeth some time ago, and it got in the rubber, and drew it down, and I cut quite a piece out of the cheek. Of course, I lost that patient, and the family. It is very necessary to be careful in using those things. I was running the engine with water-power at the same time.

President Knowles—An idea suggests itself to me. I do not know that it is worth anything, but I throw it out; I shall try it myself. When I used to manufacture teeth, before we had the corundum stones, you recollect we had the emery stones, which were not so good; it was in early times. I succeeded in cutting my teeth by having a lead disc, and using upon it this fine emery powder, when wet—and the edges of one of those lead discs would become indented, and would take in this matter; and I found I could cut very much better with one of those machines, than I could with the ordinary stones in use then. Now, I suggest whether a disc made of soft iron—say tin plate, with the tin removed and used in the mouth, with fine corundum—would not be as serviceable in cutting as the present disc. By its thinness, it would go

where the present discs would not, and where the rubber is on, keeping it wet, and using the corundum powder—why wouldn't it do?

Dr. Prather—To continue the discussion of the use of the rubber dam, I see from the journals that some writers and practitioners condemn the general use of the rubber dam, and only use it in exceptional cases. Not long since there was a discussion of that kind, and one of the speakers, after criticising the operations of others, speaking of the rubber dam, said that it was not proper or necessary in general practice, and only in particular instances. He also referred to some of the honored names of old, and the fine operations they performed without it, before it was thought of. How did they do it, he says? Well, from my observation, I think, with all due deference to the noble pioneers of our profession, there are now operations performed successfully by many operators which they never attempted, nor dreamed could be done. Some practitioners, even in this State, never use it—have not tried it—have not succeeded with it in general practice, and only use it where they can do so easily; but where we can use it easily we can do without it very well. It is where it is difficult to apply it, that it is generally most needful—that is my experience. So I use it almost universally.

President Knowles—Dou you use the rubber dam, prior to excavating?

Dr. Prather—We sometimes make a rough excavation, as I might say, and then finish it up after the dam is adjusted. Because, unless operators have better sight than I have, or can get with the aid of glasses, they cannot tell when the cavity is properly excavated, nine times out of ten, until they have the rubber dam on. Many teeth are less sensitive when operating on them in a dry state than when they are covered with the secretions of the mouth. If the secretions of the mouth are at all acid, of course it would be more

painful to operate on the teeth when wet than when dry. In such cases we can get rid of that difficulty by putting the dam on before excavating them.

President Knowles—In regard to dry excavating, latterly it has been my practice to do all my excavating with the cavity perfectly dry. This I have done for a number of reasons: I have better access to the cavity, and can see them better; there is no clogging where you use the burrs. It requires an assistant constantly blowing the air pump, and keeping the debris out, and there is less sensitiveness. You can see better, work much more rapidly, save your burrs, and you gain time; there is less trouble to the patient, and in every way it is advantageous. That is my experience; and it is only of recent date I have adopted the method spoken of—that is, as a constant practice.

Dr. Prather—When I spoke of making excavations, I meant simply removing the soft parts, not cutting away the fissures, or anything of that kind, but removing the soft or decomposed matter. Then I apply the rubber dam and finish the cavity. I cut much more than I used to, never leaving a fissure even if it appears sound, if the enamel is any way defective or the depression very deep.

Dr. Winter—I would like to ask Dr. Knowles if he does not find some trouble in some cases in putting the rubber dam on when the patient is very fretful. Does he not find that it sometimes bothers the patient, and causes the saliva to flow very freely?

Dr. Knowles—In such cases I use the saliva pump.

Dr. Winter—Some patients are very uneasy while they have the rubber dam on. I have had some cases where the saliva would flow so rapidly that it was almost impossible to keep it out with the ordinary saliva pump. Since I have got a pump which runs by water, I have had no trouble at all. Putting it in the mouth it runs itself, and that is a great relief.

Dr. Dennis—I hope every member of the Association has listened to what has just been said about the rubber dam in filling the teeth. I feel like repeating the old saying, that a man does not get too old to learn. Some say they do; but our worthy President has been many years in practice—had got in a certain line of operating, and he remarked yesterday he had modified his system a great deal. It shows conclusively that he is taking up with the modern system of operating. I like what he has stated. He has expressed it better than I could, as to the advantages gained by the use of the rubber dam in excavating. I have been applying the rubber dam before excavating since 1870. I started then against the opposition of most members of the profession, who considered it a great inconvenience to the patient, and said you could excavate a tooth as well without it. When you have the rubber dam on you can see every little defect in the cavity. There is less trouble with the use of it, and, as the President says, less time is consumed in the operation. For instance, if you have the rubber dam on three or four teeth, you can excavate and fill them with one application of the rubber dam. I hope every member will use this appliance in all cases where he is excavating. Try it a little while, and see the benefit to the dentist and the patient.

Dr. Dutch—Do you mean to say you would use it in all cases? Take the case of a small central crown cavity as large as a pin head, wouldn't you excavate and fill that without using the rubber dam at all?

Dr. Dennis—I very frequently do.

President Knowles—I wish to be understood in the same light, and do not wish to be understood that there are no possible cases where I would not do without the rubber dam; but when I spoke of it I meant in general practice. I thought I was saying something new, but I find I was not. I am something of an old fogy, and get into grooves, and thought I was telling something new, but the Doctor has taken the wind out of my sails.

Dr. Dutch—In the case of a very simple crown cavity—a pin-head cavity—the time spent in putting the rubber dam on would be sufficient to fill the tooth, therefore I would not use it in such cases.

Dr. Dennis—I use the rubber dam in all cases where I cannot keep the place I am excavating dry without it. When I am going to apply the rubber dam at all, for the filling of teeth, I put it on in the beginning.

Dr. Dutch—The finishing strokes I give to the cavity after the rubber dam is in place. I think any one who undertakes to excavate cavities that are very deep—for instance proximal cavities—without the rubber dam, in nineteen cases out of twenty will have to excavate a little farther after it is adjusted, as some decay, or other defect, will be noticed that would not have been found had it not been applied.

Dr. Prather—I do not know whether I said we used the rubber dam invariably or not. If I did I didn't mean it, because we sometimes do without it; I spoke in general terms. If it is a difficult case we use it invariably—that is, where it is possible to do it.

Dr. Dutch—Whenever I undertake to apply the rubber dam I can do it. I make up my mind before I proceed, and I have yet to see the case where I cannot be successful.

Dr. Warner—Of late I have carried the use of the rubber dam a little farther than before. There are, perhaps, others doing the same. I had a case a short time ago of a lower molar where the nerve was exposed; I did not wish to fill it at the time. I applied the rubber dam, and I wanted to keep the cavity open to allow the nerve to bleed; but I did not wish to lose any time, so I stretched it over to the other side of the mouth and clamped it there, excavated a cavity, and put in a temporary filling. I had an upper bicuspid with a compound cavity that I wanted to fill also,

so I took my burr, opened a hole through, and put it on the upper tooth. I found I could work very well, apparently, on any one of them that I wished, without one interfering with the other at all. Then I returned to the lower molar, and put in a temporary filling. I had the same piece of rubber dam on the upper and lower teeth; it was a success. I have used it since, and find it easier to use it that way, and you can use it on as many teeth as you want to on both sides of the mouth.

Dr. Dutch—I have heard it mentioned that the rubber produced nausea in some persons' mouths. The rubber, as you get it from the depot, is covered with sulphur, and has a sulphurous smell. I wash it with soap, and rinse it with Florida water, making it much pleasanter for the patient.

Dr. Dutch—I would like to ask Dr. S. E. Knowles if he has looked any further into that case he spoke to me about, of local feeding.

Dr. S. E. Knowles—I have not seen anything more of that case. I have not seen the patient since; and inasmuch as experiments on that point are yet very incomplete, I would rather not say anything about it at this session, because I have really nothing to communicate.

President Knowles—Perhaps it might be well enough to state what has been done, so that other gentlemen may have an opportunity during the next year to experiment in that direction.

Dr. S. E. Knowles—The case to which Dr. Dutch referred was one in which the lacto phosphate of lime had been made use of for the purpose of local feeding. I read an article on that subject some time since—I think in the *Missouri Dental Journal*—which was written by a gentleman practicing in some portion of Kansas, in which he gave the detail of an experiment he performed, which consisted in making an application of the semi-fluid lacto phosphate of

lime to the exposed nerve. In this case in a very short time—I think within three days—there was apparently a partial regeneration of something, whether tooth bone or not I think was not determined; however, he gave it to be understood that it was tooth bone. He left us to infer that the tooth, being still valuable, had not been extracted; there was no microscopic examination. The article attracted my attention, and I thought that if such a thing would take place where the nerve was exposed, that possibly we might get a partial regeneration of bone in case the nerve was not exposed; and, having that object in view, I excavated a cavity in a tooth in the mouth of a young man who is with us, and prepared it something in this way: I drilled into the crown with a large drill, perhaps for nearly the eighth of an inch. I then took a smaller drill and drilled a little deeper, right in the direction of the nerve, and drilled until it became quite sensitive. I think that I must have passed within perhaps twice the thickness of ordinary writing paper of the pulp. I applied semi-fluid lacto phosphate of lime; over that I placed a little gold cap, and cemented it down with a small portion of oxy-chloride of zinc; that was to prevent the lacto phosphate of lime wetting the gold. This was allowed to remain in three weeks, and in the presence of Dr. Kingsbury I opened the cavity. When the tooth was filled, four of us noted the depth of the cavity, and upon taking it out there was an apparent deposition of something—I do not know what it was. The tooth is still in the mouth, and I have been unable, of course, to make a thorough examination. It may possibly have been due simply to absorption of the aqueous portion of the material, and that it was a sediment of the phosphate of lime, although it had the appearance almost of secondary dentine. It had a peculiar pale yellow waxy appearance, and was very hard. That there was a filling in of something I am sure; but not having had an opportunity of making a microscopic examination, I am not prepared to assert that there was a deposition of dentine in this case. As I have not had an opportunity to

make a microscopic examination, and as it has been a very short time since these experiments were instituted, I did not intend at this session to say anything about it at all; but I will try at the next session to produce a section of a tooth prepared in that way, and have it for exhibition, in case I should find that any true deposit had taken place. I think this subject is well worth the attention of all who desire to save the natural teeth; I have certainly a good deal of faith in it, and until I find by actual experiment that no good can arise from it I shall certainly continue experimenting.

Dr. Birge—I wish to say, in regard to exposed nerves, that I have been experimenting. For the last year or two I do not think I have had a single failure, and I can save every nerve. All I want to do or know when the patient comes in is that the nerve is alive, even if it has been aching three or four days or longer. My manner of practising is to put the rubber dam on, and after excavating, use the balsam of fir and chloroform to cover the nerve. Then I use a preparation of oxide of zinc and carbolic acid, putting it right over the nerve. After that is hardened I use the oxy-chloride of zinc; and I have not had a single failure.

Dr. Dutch—In my observations of different practitioners, it became apparent to me many were doing as they did many years ago. When a thing of this kind is an experiment I explain it to my patient. I say, "Here this nerve is exposed; I will try and save the nerve alive; do not rush off and think the tooth is gone because it hurts you a little." I make a few local applications, and remove all the trouble. If we save the nerve alive, we certainly have a better case than where the nerve is killed. Some time ago a patient of Dr. Knowles' came to me. She wanted me to pull out a tooth on which Dr. Knowles had made these applications. I asked her what the trouble was, looked at the tooth, and said, "There is no necessity for pulling it out. The Doctor wants to save this tooth for you, and has done the best he could, and you ought to put up with a little annoyance."

I made inquiry, and found she was a person who had a great deal to attend to in the day time, and toward the evening her whole nervous system was broken down. I said she should take something to quiet her nerves. Then I made some local application, applied some cotton and opium, and told her to go back to Dr. Knowles, and make her complaints to him, and tell him what I had done. I saw her a couple of days afterwards, and she said the tooth had not troubled her since. People will get fretful if they come in with an exposed pulp, and do not get immediate relief. I find in capping pulps I don't have half the trouble that I did when I put in the oxy-chloride of zinc, with nothing to protect it from coming in contact with the pulp, although put in so as to make no pressure upon it. Now the difference between this method and the other is, I put in a piece of paper that has been dipped in chloroform and balsam of fir. Almost immediately after you lay it there, the chloroform evaporates. I usually tell my patients if the operation is going to hurt them, that such will be the case, and then they are not shocked. I would impress on the profession the importance of trying to save the pulp alive, and not giving way to our patients too quickly, where they want us to kill the nerve. That is a quick way of disposing of the trouble, but not always the best way. Make every effort to save the nerve that you can. I will state a case of exposed pulp that came under my observation a year and a half ago, to which I applied a very thin preparation of oxy-chloride of zinc, making no pressure on the nerve. The patient spoke of feeling a sharp pain for some two or three days afterwards; it passed away, and she said it did not feel differently from any other tooth. Some six or eight months afterwards I examined it, and it had worn out a great deal. I attempted to cut away the oxy-chloride of zinc, not calculating to expose the nerve; but I accidentally cut a little farther than I intended and it all came out, and the nerve was in the same condition as six or eight months previous. The blood came from it, showing that there was life and sensation

there. I applied Francis' preparation, and have not had any trouble with it since. I am satisfied from the sensation when injecting cold water, that the pulp is not dead.

Dr. Winter—For the last eighteen months or two years I have been using the balsam and various other preparations, but I did not succeed as well as I have since I laid them aside. I use nothing but creosote and the oxy-chloride of zinc, filling them as I mentioned yesterday. I do not care how much the nerve is exposed—whether it bleeds or not. I wipe the blood off carefully, and to prevent bleeding I take a little chloroform on something that is very pliable, and wipe up the blood with it. I mix up my bone preparation with creosote, so as to make it about the consistency of cream, and in some cases a little thinner, and place it over the nerve, putting about the thickness probably of two sheets of writing paper there, just nicely covering it a little beyond the nerve, so as to lap over on the dentine; leave that for a moment and then put the next in a little harder, filling the cavity with it; I find that there is less pain and trouble that in any other way. Try both plans, and in a year from now report which you like best. I think you will report in favor of my plan. One of my operators filled a tooth for a Chinaman, where a portion of the nerve had sloughed. The puss was wiped off, and all the dead portions removed, until we got down to healthy granulations. It was treated in the way I have recommended, and the tooth is doing well, and the nerve is still alive. About one-third of that nerve was removed; and we are watching the case with a great deal of interest.

Dr. Sichel—I would like to inquire where does the pus come from if the nerve is alive?

President Knowles—I suppose from that portion of the nerve which is dead.

Dr. Winter—I said a portion of the nerve had sloughed—a portion that was dead. All the dead portion was removed,

and we got down to healthy granulations—got healthy blood from the nerve. That was wiped off carefully, and then we treated it in the manner I spoke of. About two-thirds of the nerve I think was left in.

President Knowles—Has any gentleman had any experience in the application of pepsine in these cases?

Dr. Dutch—In relation to the method that Dr. Winter has suggested to use, I read that when it was published in the journals, and it seemed to me to have the same objection as the one I had abandoned, viz.: the use of oxy-chloride to the nerve alone. I adopted the paper process, laying it on with the balsam of fir and chloroform, because that was something kind and smooth lying in contact. In using the oxy-chloride of zinc, there is a liability of an irritating rough substance coming in contact with the pulp, preventing its healing up. That was the only reason why I did not follow up any experiments in that direction.

Dr. Winter—I would just state that I am not at all satisfied as to what the action of creosote is; I can compare it to nothing else but a coating. That portion does not harden, and when you put on your oxy-chloride of zinc you have a little margin to go on a little cushion there to protect the nerve. That is the theory on which I claim it is a little better. You have a thickness there of about two sheets of writing paper, which is enough to fill on, and still leaves no space for any air. I will admit, however, in applying it a little more pain is given to the patient.

Dr. Birge—If the paper is properly put on, and covered with this balsam of fir and chloroform, there would not be any difficulty. It must be put on properly; cover the whole nerve, and then with the preparation of creosote I think it will save the nerve in every single instance; I do not believe you will have a failure. If you do, it is because the paper with the solution is not in the proper place. I think if every member of this Society will try it, they will find very few, if any, failures.

Dr. McCowen—I will ask Dr. Birge if several teeth have been aching for three or four days, or a month possibly, if he makes that application and stops the tooth itself up tight without any previous preparation?

Dr. Birge—Yes, sir; without any previous preparation whatever, if I find the nerve is alive by throwing a little water on it. If I find the tooth is alive I feel certain I can save the life of the nerve.

Dr. Winter—I would like to ask Dr. Birge, if the nerve is badly congested, so badly congested that it does not have its normal appearance, if he would not in that case treat it a little differently?

Dr. Birge—No, sir; I have never failed. I may fail, but I have never failed in a case where the tooth was aching, and I could get at it and cover it properly with this solution and then with the creosote.

Dr. S. E. Knowles—Dr. Birge, how long have you been practising this method?

Dr. Birge—With regard to this creosote only three or four months perhaps; the other preparation I have been using eighteen months or two years. Since I commenced using the creosote I have never had a single failure.

Dr. S. E. Knowles—According to my idea it is necessary for a certain amount of time to elapse before we can say whether the capping of a nerve is successful or not. I once had the misfortune to meet with a case where the nerve had been capped, and had given no trouble for nearly three years, when the tooth began to *growl*, as we say, and various means were resorted to to allay the pain; and finally, on account of the violent suffering of the patient, although there was no evident ulceration, the tooth was extracted. On opening into it I found the nerve gangrenous; the little foramen at the apex of the roots was entirely stopped up, so far as I

could see. There was no opening whatever into the deep tissue of the jaw. Now, here is a case where I am sure the nerve must have died perhaps within a year after the capping, and it had given no trouble until a certain amount of absorption had taken place; and then the trouble I have spoken of arose. I think sometimes a case of that kind arises in which we are led to believe the capping was perfectly successful and that the nerve is alive; whereas it is dead, and has not manifested itself, simply because it is covered up.

Dr. Birge—If there be any pain or trouble, certainly the patient would know it. You may find the nerve devitalized without any exposure of it; the tooth may receive an injury, or something of that kind; and yet, as in this case, it may not be the capping that destroyed the nerve.

Dr. S. E. Knowles—We are governed by the way the tooth acts. If the nerve dies we expect to have evidence of it; but sometimes cases will arise in which there is no connection between the tooth and the deeper-tissues; and in that case trouble might not be manifested for quite a little time. It is only when there is a communication between the gangrenous nerve and the deeper-tissues that we have any trouble manifested at all. It would always remain tight in that way whether the pulp canal was occupied by gold, by cotton, or, for that matter, by gangrenous nerve.

Dr. Birge—If I fill a tooth that way, and find in three or four weeks they have not a particle of pain, I think it is safe.

Dr. Winter—I am not so sanguine as many are about these cases. I think all our capping is as yet an experiment, and three or four years will tell us what they will do. I calculate to lose some of my cases, and I apprehend the balance of us will lose some of theirs.

President Knowles—I think, gentlemen, that Dr. Winter has spoken the truth in that last remark; for undoubtedly

we arrive at conclusions from a too frail basis. Now, I do not consider a tooth is absolutely safe that has been treated in that way. I have seen a great many cases, gentlemen, where I supposed I had success, and found an ultimate failure; I have yet to see the absolute certain method of saving exposed nerves under all circumstances.

Dr. Dutch—I presume, Mr. President, that is the case with all of us. At the outset I said I explained to my patients that it was an experiment; that we might attempt to do so, and that it had often met with success as far as we had been able to see. When a man fills a tooth he may think he saves it; but he cannot tell for a long time. He may save it *pro tem.* I have seen a gentleman with as nice a lot of filling in his mouth as I ever saw, and in three or four years from that time every one dropped out. It was no fault of the dentist. So when you talk about saving them against everything, you have to take the contingencies under consideration.

President Knowles—My son spoke about lacto phosphate of lime, together with the free phosphate mixed with it. Judging from analogy, and from what I consider to be the proper philosophical basis that is claimed for its action, I have more faith in that treatment, as a matter that has not yet been fully tried, than I have of any practice that has yet been thought of in the profession. There seems to be the proper amount of pabulum necessary for restoration, and there is a natural expectation of a perfect restoration in those cases. It is exceedingly suggestive in cases of local feeding. Drill into the sides of the tooth, and put in your substance for local feeding. I am disposed to give trial to that—at least to push it further than it has yet gone, because it looks more philosophical than any practice I have yet seen. I think we must seize upon some law of restoration, something that shall by some law of nature restore these parts, and not depend on mere protection, as these local cappings seem to indicate. I believe if the

external covering membrane of the nerve is not destroyed that it is capable of throwing out bony matter for its protection or recovery; but I believe if that is once destroyed, it is at all events problematical.

Dr. Birge—In treating these cases I never tell my patient I am certain of saving the tooth—I always tell them it is an experiment; but I say up to this time I have never failed with this preparation I have spoken of.

President Knowles—So far it is encouraging.

Dr. S. E. Knowles—I spoke of lacto phosphate of lime. In this connection I might state the result of another experiment which I performed about six or seven months ago. The patient applied to me with two very large proximal cavities. During the excavation I found it necessary to nearly expose both nerves. The dentine was so thin over the nerve that the pink color of the nerve could be distinctly made out. Although this portion was somewhat softened, I determined not to remove it. Instead of making an application of carbolic acid or creosote, or anything of the kind, as we ordinarily do, I thought I would try lactic acid, for this reason: there is plenty of phosphate of lime in this debris which covers the nerve, and it is therefore not necessary to add any phosphate of lime to the solution. I thought if I could get the tooth to drink up, as it were, some lactic acid, and seal it up, if there was any disposition on the part of the nerve to throw granulations out on the inside, or if there was such a possible thing as depositing on the outside, it would be likely to take place in this case; and I prepared the cavity, as I said, in this way. I saturated it thoroughly with that lactic acid, and filled it up with oxy-chloride of zinc. Those fillings were allowed to remain in for about three or four months, at the end of which time I re-excavated them, taking out all the oxy-chloride of zinc; the appearance was something like this: The dentine was very hard, and of that peculiar pale yellow, straw color, the pink appearance having entirely disappeared.

I forced a jet of water on both, and found neither of them sensitive, and I filled entirely with gold, putting nothing over the pulp, and there has been no trouble from them since. The nerve certainly did not die, otherwise this change would not have taken place.

President Knowles—I do not understand the *rationale* of the action of pure lactic acid in this case. I have spoken to my son about it, and we do not seem to understand each other; there is therapeutic action involved.

Dr. S. E. Knowles—In explanation, I would say I believe it takes place in something like this manner: The natural food of the tooth is phosphate of lime, and we are led to believe that the solvent normally in the body is lactic acid; that it is presented to the tooth for assimilation, in the form of lacto phosphate of lime. Now, in cases of that kind, there being plenty of phosphate of lime present, it was not necessary to put any new in; but all we wanted to do was simply to dissolve it. We know that throughout the entire system there is a disposition to economize. For instance, in repair or in growth, nature will not go out of her way to seek for pabulum when it is handy. Upon that hypothesis I have been acting in regard to the local feeding of teeth: that perhaps it does not cause the tooth to take up much more than it otherwise would, but because it is handier—it is more accessible.

Dr. Dennis—The organic and inorganic matter composing the tooth, you might say, are bound together; or, you might say, the atomic or molecular elements of the tooth are bound together by a law that is very delicate; and you may say that the molecular elements of the tooth live in as happy a union as a bride and bridegroom during the honey-moon, until something steps in to interfere; and when some stronger element, or when some man interferes with their affections, something naturally flies off like putting hydrochloric acid on carbonate of lime—as a matter of course something flies

away. There is a sort of affinity there that causes the green-eyed monster to step in, and he goes off and gets a divorce —and I look upon the solution of the teeth a great deal in this way. Here, for instance, the tooth is made up of phosphate of lime, carbonate of lime and flouride of calcium, and other elements, and when the acids of the mouth step in and dissolve that tooth and dissolve this lime, then, as a matter of course, there is a chemical action—the acid steps in and destroys the molecular affection. What I want to get at now is simply to ascertain, if possible, what is the molecular affection when that chloride of zinc is applied to the organic and inorganic matter in the tooth. Gentlemen, I do not pretend to know. I have been reading up this subject of the physiological effect of the oxy-chloride of zinc upon the teeth ever since it has been advocated. I think it is a subject upon which we should all consider well; and perhaps some gentleman next year will bring something new, or give us some light on that point. I should like to know whether it is a physiological or chemical action, or whether it is pathological action. Some claim there is no physiological action, and that the application of this material destroys the vitality of the tooth. Of course there must be pathological action then, instead of physiological. Now what is the action?

President Knowles—The first step in the use of oxy-chloride of zinc is to change its character. There is destruction; there is a change. I have taken fillings of it out, and examamined them a great many times, when there was discovered a fatty matter. Now, whether that is coagulation, or whether it is a fatty degeneration, or what it is, I have never been able to determine; but there is evidently a pathological change that is present and visible to the unassisted eye. What its microscopic molecular arrangement may be I do not know.

Dr. Dennis—I have seen cases where the nerve has been capped with oxy-chloride of zinc, where the pulp itself had been changed or ossified. The pulp cavity seemed almost, if not entirely, filled with what would be naturally looked

upon as a lime deposit, and the tooth had just as much vitality as it ever had, and the pulp had evidently receded. There was vitality below, but the original pulp chamber was filled with something else.

President Knowles—In the case I have referred to there was no evidence whatever of calcareous deposit, but there appeared to be a metamorphosis of the pulp chamber into a curdy white substance like common coagulated albumen. Gentlemen, I think it would be well to keep an absolute and careful record of these things in our practice; there is more importance than we imagine attached to them. I am disposed myself to attach much more importance to the minute details of these cases of practice, and in all else that concerns them; keep them more closely under our eye and hand. This general way of getting at a thing, without any intentional course in the matter, does not produce any particular good. Let us have absolute fact, based upon close and critical examination.

Dr. Winter—It would be an excellent idea to appoint a committee of three members to perform some operations in regard to covering nerves, and report at the next meeting.

Dr. McCowen—In the natural wear of the teeth they often antagonize, so as to wear off square at the crowns, and as persons get old they will be worn down clear beyond where the pulp was early in life. There seems to be a defensive action of the pulp—it commences throwing out tooth substance. I have been using this oxy-chloride of zinc. Its first action, when put in, causing a whiteness, I attribute to its caustic property. Almost any caustic you use would produce the same action; but after that it works upon the theory that it is merely a complete mechanical protection, and the other action is only of the nerve—the pulp substance, to protect itself—the same as follows the wearing down of the teeth.

Dr. Bunnell—I wish to enquire what causes the hypertrophy of the root of the tooth on the secondary dentition. What causes does it proceed from?

President Knowles—It is generally supposed it comes from a low state of vitality; it may be induced by various causes; it sometimes arises from a constitutional diathesis. It is one of the results from mercurial affections and from syphilitic affections. I suppose it to be the result of a low character of vitality and sub-acute inflammatory action. I do not know but other gentlemen here may have some other theory in regard to it.

Dr. Bunnel—Could not the same causes that produced this be brought to bear to close up a pulp cavity in a tooth?

President Knowles—Doubtless it is an analogous reasoning where there is a deposit of secondary dentine. There is a difference, I believe, between the chemical and microscopic constituents. I saw the other day an article claiming that the cementum is true bone, having all the characteristics of it; but I am not prepared to accept that. Perhaps there are other gentlemen here more learned than I am in histology, who could be able to speak on the subject—microscopic histology especially. We have a committee here on histology; I do not know whether they have anything to say or not.

Dr. S. E. Knowles—There is considerable evidence both ways. The bone we recognize by what we call the Haversian system, which consists of canalicula and lacunæ, ranged in concentric layers. Now, in cementum, although we had the bone cells, we lack the Haversian canals, and this laminated arrangement.

President Knowles—Yet that is found sometimes.

Dr. S. E. Knowles—Very rarely. It is true they have been observed once in a great while, but it is like the passage of the tubuli into the enamel. They are variations from the rule; and I think the best authorities consider that cementum is not bone, inasmuch as it lacks two of the elements of bone.

Dr. Cogswell exhibited two pairs of right and left superior molar forceps, manufactured by Ash & Sons, London, and one

inferior pair made in San Francisco; also a right and left elevator for removing inferior fangs, designed by him, all being new to the profession in America. The doctor explained their uses and advantages, and stated that he had found them superior to any ever used by himself.

Dr. Lane exhibited an artificial denture, consisting of human teeth mounted on ivory base, which had evidently been worn in the mouth for a long time. "They were found in the road about ten miles out from the city of St. Johns, Newfoundland, and were probably made in Paris before dentistry was practiced as a science."

Dr. Sichel spoke in favor of Dr. Chance's gold points—had the very best success in making gold fillings with them. The points, as made by Dr. Chance, were very expensive; could be made much cheaper by every dentist, in their own laboratory, but for the infringement of the patent.

Adjourned to meet at Heald's Business College at 7:30 o'clock P. M.

SECOND DAY—EVENING SESSION.

Convened at 7:30 P. M., President Knowles in the chair.

Roll called, and minutes read and approved.

Dr. G. A. Case was admitted to membership.

Dr. Cutlar, of the Advisory Committee, desired to know what kind of a report the Association desired from said committee, since they deemed the one previously offered, which had been withdrawn, an improper one.

Dr. Crossett moved that said committee be instructed to report their action on behalf of this Association up to the time of the incorporation of the California College of Dental Surgery.

Dr. Menefee moved to amend—that they report their action up to the present time. Amendment lost.

Dr. Crossett offered as a substitute:

Resolved, That the Advisory Committee be instructed to report their action on behalf of this Association up to the present time, outside of any incorporation.

Lost.

President Knowles suggested that it would be proper for the committee to report all their acts as an Advisory Committee, regardless of any incorporations. He presumed a report setting forth their failures or successes, on behalf of the Association, whilst acting under the instructions set forth in the resolutions of last session, would be acceptable.

Dr. S. E. Knowles, Chairman of Committee on Dental Histology and Microscopy, read the following report:

Gentlemen: Of all the subjects to be contemplated by the intelligent practitioner of our specialty, nothing at the present time is so peculiarly interesting as the recent developments relating to the phenomena of caries.

Although it may not be evident to us that any radical difference in practice will be likely to grow out of a more thorough understanding of it, we should not allow such argument to deter us from the most thorough search and rigid observation.

It ought to be, and I trust is, an intellectual satisfaction to every dentist to be acquainted with the *rationale*, or if you please, the theory, of all diseases which he undertakes to treat, even if such minute knowledge should not be absolutely essential in order to effect a cure. We, as dental specialists, limited to the consideration of an exceedingly circumscribed territory, ought to be conversant not only with the generalities but with the *minutiæ* of all that relates to the teeth.

Until quite a recent time, it would seem as if any one of reasonable desires ought to have been contented to accept some one of the various theories promulgated, to account for the origin and progress of this peculiar process, but at present it appears as if we were compelled, by force of fact, to

return once more to the ancient belief that the teeth are destroyed principally through the agency of acid solvents.

As the matter stands at present, caries is due to predisposing causes, selecting the points to be attacked and favoring its progress by some peculiarity of structure—to the solvent action of acids, and to the development and growth of certain parasites; these as you observe entirely ignore the influence of vital action. Tomes, in his most recent writings upon this subject, arrives at these conclusions: "That caries is the effect of external causes, in which so called 'vital' forces play no part." The point upon which advocates of vital theory based their assertions, was the fact that during the progress of decay a zone of transparency appeared with much regularity between the seat of caries and the living pulp.

Leber and Rottenstein, in their work on Dental Caries, while admitting the fact of its presence, have undertaken to show that it cannot possibly be due to the cause heretofore ascribed, but claim it to be the result of a decalcification of the intertubular substance by acid solvents; they cite the fact that it is found not only in caries affecting living teeth, but also teeth of replacement. They state further, that a deposition of calcarious salts in the tubuli would not cause a transparent zone to appear; they admit, however, that a deposition may take place in the tubuli, but account for it by asserting that it is a precipitate of the salts of calcium, which have been carried into the tubuli by diffusion.

That a transparent zone may exist in decaying teeth, owing its origin to decalcificatiou of the matrix, is by them fully established; transparent by virtue of the fact that the index of refraction of the intertubular substance is altered by decalcification, so as to equal in refractive power the dentinal tubuli and contents. That transparency *may* be due to calcification of the dentinal fibrillar is equally manifest—that is by equalization of refractive power—and under certain circumstances, I am convinced it does take place.

If a tooth, healthy at all points save one, be treated by removing the decomposed and softened tissue, properly filled

with some material that prevents the ingress of solvent fluids and parasites, and after the sensitiveness following this kind of operation subsides, if the tooth be extracted, a section made and placed under the microscope, the border of the dentine immediately investing the filling will be found to be transparent; further, if a cavity be drilled in a healthy tooth, filled, and left for a short time, the same bright band is still found to be present. In such cases it is extremely difficult to conceive how this transparency could be caused to appear, either by decalcification of the intertubular tissue or by simple neutralization of the acid solvents, but the microscopical appearance, physical property of greater density than normal dentine, and the fact that calcification of the tubuli would render the index of refaction equal to that of the surrounding tissue, all point to the probable fact of deposition of the earthy salts in the tubuli, by agency of formative action.

The constant appearance of this clear zone, under these circumstances, may be easily verified by all; but to identify it with the zone present during caries, is yet to be discussed. Let us now consider the probable cause of its production: The pulp in its normal condition is removed from all external influences by the non-conducting investment of enamel; the complete removal of this structure at any given point, and the substitution of a filling material, notably so in case of metallic filling, places the parts in an entirely different condition, especially regarding changes of temperature. We now have, as a substitute for the natural non-conducting tissue, a substance capable of transmitting thermal variations with the utmost facility and rapidity, thus inducing a certain amount of irritation, which is communicated by the fibrillæ to the pulp. It is quite natural for the pulp to protest against this abnormal condition, take the necessary steps to protect itself, and restore the normal status as nearly as possible. The formation of enamel, the natural covering of the dentine in this locality being out of the question, the substitution of the salts of calcium for the peripheral portion of the fibrillæ, seems to be the most natural result to expect. That the pulp

is abundantly able to secrete these salts, and deposit them in the interior of the pulp chamber, is not doubted, and the fibrillated contents of the tubuli being a continuation of the same structure, a process from the dentinal cells, it seems not unreasonable to attribute to them the same function.

This phenomenon of obliteration of the tubuli by deposition of new matter may be observed to occur in certain other cases, as for instance where the enamel of a tooth is being slowly removed by coming in contact with the articulating surface of its antagonist; in such a case, before the enamel is entirely removed at any point, it is quite impossible to attribute the result to decalcification, or precipitation, for the dentine has not been exposed to the influence of acid solvents.

Let us take one step further, and examine into the conditions present in case of stationary caries. Here we find the zone most clearly marked. It obviously cannot be due to decalcification, as this condition would favor the carious disintegration, but should rather be attributed to a deposition of the earthy salts; if such deposition were due to simple precipitation, it would be in direct proportion to the activity of the acid solvents at the periphery of the dentine, but on the contrary it is well defined, in proportion to the tardiness of solvent action, and is therefore most likely to be the result of formative action. The most potent argument against the agency of vital action is the fact that teeth of replacement present a transparent zone during the course of their solution, but it has been shown that a transparent zone may be caused to appear in a living tooth, under such circumstances as to preclude all possibility of having been brought about in a similar manner, therefore the identification of our zone with the other is impossible.

With the fact before us that a transparent zone is found in a living tooth, owing its origin to formative action, it remains for some observer of more extended experience to determine whether or not it is *the* zone present during caries, and if so to appraise its value as a modifier of carious degeneration.

A letter from Dr. F. M. Shields to Dr. Dennis, relative to

an essay on the "Extraction of Teeth," was read by the Secretary. Dr. Dennis requested and was granted permission to defer reading Dr. Shield's essay until to-morrow.

Dr. Plomteaux read the following essay:

DENTAL EDUCATION.

As each succeeding decade brings to view its own peculiar developments, we cannot fail to recognize the increasing demand that all those who would be truly honorable and successful practitioners of Dentistry, must possess a thorough *dental education.*

This demand is so apparent that none among us, of ordinary intelligence, can be found to array ourselves in opposition to it; and a belief that the prosperity of our profession so largely depends upon a more thorough education in all that pertains to our specialty, is so prevalent that all progressive practitioners throughout the world are not only lending their aid and influence and extending fostering hands to the dental colleges now in existence, but are wisely laying plans which we hope to see rigorously carried into effect, to secure the organization of other colleges in places remote from those already in existence, that every facility for acquiring a *thorough* dental education may be extended to those desiring to become dentists, and that those now in practice may do honor to themselves and their chosen vocation by seeking and securing the degree which all of us, not now possessors of, so much desire.

How many hearts there are to-day beating with pride at the rising influence and expanding usefulness of our specialty, and we point with pride to our dental colleges and numerous dental associations as evidences that we are striving to elevate our standard to the status of *any* and all the most learned professions. Our own acts, as an Association, has long since manifested that we recognize the fact that the time has come when we must assume a higher plane and more extended horizon.

If there be any among us who do not appreciate the value of every movement in this direction, on principles of correct professional policy, they are standing in their own light, and may be safely classed as professional drones.

It is indeed a sad commentary on the dental profession of any State, when such facts as the following from the *Dental Cosmos* for May, 1874, can be found existing to an extent that almost disheartens the most ambitious from making further efforts as "dental reformers." I quote the article in question:

"PROFESSIONAL DIGNITY.—For professional dignity California can grade it down to zero. I met an individual in North San Juan, California, who combines a stallion for breeding purposes, with the dental profession, and travels about the country with him. Another in Downieville, California, I have seen seated in a livery stable, finishing a vulcanite plate, and showing the "boys" what he "knowed" about dentistry. In this town, we have another who combines the fish business with dentistry, and whose office and hands smell of his other occupation. Another in Camptonville, California, combines clock and watch mending. Such are some of the phases of the profession in California.—*Dentist, Santa Barbara, California.*"

Is it to be wondered at that our legislators refuse to come to our assistance, by passing a law that will require the requisite qualifications to be in possession of all who would practice dentistry, so long as four-fifths of the practitioners on the Pacific Coast are in no way connected with dental associations—less than one-seventh (and nearly all of that seventh are members of dental societies) readers of dental literature, and one-third of the whole number are of the class mentioned in the article quoted.

Again, we find that one of the leading journals of San Francisco, and several interior journals, oppose legislation to compel dental education, although they favor compulsory education in the common schools; and while the city editor expresses a great dislike to employ any dentist who has not received an excellent education in his profession, he

says, "Any one who has lived in the mountain towns knows that physicians are often called upon to perform the *simple* operation of filling a tooth, and do the work well." Also, he says, "Some of the Dental Colleges are very shabby institutions, and dental diplomas do not always prove the holders either skillful or honest."

We deny that any Dental College in existence is a "shabby institution." We admit the truth of the statement that a diploma does not always prove the holder either skillful or honest. We, however, would as soon think of trying to dissuade an individual from securing a passport into Heaven, by the argument that Angels have fallen therefrom, as to present such an argument as the above against dental education, for everything that opposes legitimate dental legislation, is to a very great extent opposing dental education.

We will not hold the legislators or the author of the above responsible for their opposition to us, but charge it upon unworthy practitioners of dentistry, where it truly belongs, for they are prompted to such acts by the unlearned of our profession.

There are men who graduate from all the various institutions of learning, receiving the highest degrees conferred in the respective departments they may attend, who, after receiving their diplomas, go out into and through the world as charlatans, letting no professional act of theirs ever do honor to their *alma-mater*, their profession or themselves. They imagine when they receive their parchment that their work is done, their education finished, and their labors over, and all that shall be expected of them is that they make a financial success of their practice in the future.

With *true dentists*, such is not the case. They set out, after receiving their diplomas, or what they deem a proper course of instruction, feeling that they have only prepared themselves to enter the great school of an active professional life; they feel that they have just left the primary to enter the preparatory department; they feel that they have just

gained control of their minds, and disciplined them to solve the great problems of their chosen science, which each day's operations at the chair bring before them. And if, perchance, editors or legislators should be so fortunate as to engage their services, they will undoubtedly ascertain the fact that dentistry is a science, and as a science one of the most scientific of all sciences, and that it is very essential that all its followers should be as well qualified by a thorough education as those of any other profession. Thus we see that a thorough dental education not only benefits the individual professing it, through the benefits he may be enabled to confer on his patients by skillful and scientific operations for them, but benefits the whole profession and the people, by reason of his ability to impart an education, so to speak, to all who seek his services, thus doing much in the way of elevating our specialty.

I have made the above allusions merely to show that the non-progressive members of our profession have an undoubted influence for evil, and hence the greater necessity for some action on our part that will bring before the intelligent people of our State the fact that dentistry is a profession; and this can be done more successfully by the organization of a *Dental College* than by any other means.

With all our boastings of the rapid progress and present high standing of dentistry, we are indeed far behind the age, and there is very great need that we of California come up manfully to our work, and prove to the world that ours is a noble calling, and that we have higher, grander, and more worthy objects in view in pursuing it than merely personal or financial considerations.

"Let every member of this Association be ever found extending helping hands to wrest our standing from the low position to which it has been consigned by ignorant and dishonest practitioners."

One of the most glorious fruits that can ever be hoped for as a result of our associative labors, will be the complete organization of a Dental College in this State. It would

prove one of the mightiest implements to relieve us from the ponderous burdens of professional ignorance which has so weighed us down, not only in the past but in the present age.

Education is no more a preponderating element of success in any other profession than in our own ; and it is an incontrovertible fact that those who have the proper energy and perseverance to acquire a dental education, soon sweep on in advance of the uneducated dentist, harvesting pearls, whilst the latter will be found struggling along in the wake of progress catching at straws.

We should always be found progressing, for that degree of perfection that will enable us to say that our professional education is complete can never be attained. Continued progress is a principle implanted in our natures by Him who gave us reasoning powers. This living, governing principle directs the mind onward and upward. Without it, all the noble inspirations that fill the breast of man would be wanting. It ever holds out before us an ideal of excellence ; a standard of attainment—something that our soul longs to possess ; a glorious vision—a floating ideal, that we see hovering around and over us like the bow of promise, advancing as we advance, rising as we rise, and moving onward as we move. We can never reach it—but without its allurements all our aspirations would be gone, and life would be but a blank.

Let the motto of every member of the California State Dental Association be, onward, still onward! We live in an age in which it is an honor to unveil some obscure point in science ; an age in which deep and productive thought receives its just reward. The advancing intelligence of the present day does not confine itself to the wealthy and proud. *Merit*, instead of wealth and rank, is a man's passport to greatness in this progressive age.

Our State is already adorned with institutions of learning, in which are educated and inspired with high and noble emotions those who would become members of any other

profession than our own; and there is no reason why we should not equal, if not excel, in the race for intellectual greatness and glory, as we have already excelled every other specialty of the medical science—so far as medicinal remedies, appliances and instruments for performing the respective operations belonging to the several specialties are concerned.

We hope that ere the close of this annual session we, as an association, will have taken up a well-defined line of march, and have flung to the breeze the banner of "perpetual progress of dental education;" and may its folds never droop until, by the glorious efforts of its followers, it shall be perched upon the loftiest summit of professional fame.

Adjourned till 10 o'clock A. M., to-morrow.

THIRD DAY—MORNING SESSION.

Convened at 10 o'clock A. M., President Knowles in the chair.

Roll called and minutes read and approved.

J. J. Vincent, D.M.D., of Amherst, Massachusetts, was made a corresponding member on recommendation of Dr. Hubbard, and invited to sit with us during the rest of the session.

Mrs. Treadwell, a member of the dental profession from Philadelphia, was introduced to the Association by the President, and invited to sit with us during the session.

Dr. Hubbard, of the Committee on Dental Pathology and Surgery, read the following paper:

EPITHELIAL CANCER OF THE TONGUE.

The definition Woods gives of the subject announced

above is, that "it is that kind of cancer which assumes the form of an irregular and exuberant deposit of cells, identical with, or at least resembling closely, those cells which form the normal covering or investment of mucous membrane and skin, and which are called 'epithelial,' and are, so to speak, formations germain to the parts affected." The common forms of disease are included by Hanover, under the name *ephithelioma.*

It is considered by the best pathologists I have been able to consult, to resemble so closely in its course and effects the real carcinomatous diseases of scirrhus and cephaloma, as to entitle it to the fatal distinction of being placed among the cancerous diseases; while others consider it to be cancroid, or resembling it in its characters. The most characteristic features are its uncontrolable growth; its progressive invasion of neighboring tissue; its supplanting or pushing aside and destroying the growth of the normal structures; the very severe darting pains which attend its course, caused by its involving the ultimate fibrels of the nerves of the part, in the same manner perhaps as a corn affects them under the pressure of the boot; its liability to invade the lymphatics, and so to make its way into the system; and its occasional recurrence in the deeper organs and viscera, sometimes as ephithelial deposits, and sometimes as one of the more decided malignant growths, namely "encephaloma."

On the other hand, it is more tardy in its fatal progress than the more virulent forms of carcinoma, and is much less apt to recur in the deep seated viscera as a secondary deposit, though its progress resembles in many important points that of scirrhus or hard cancer, especially that aspect of the latter, in which the advocates of its local origin and slow continuously progressive course view it; and sometimes its microscopic elements can, taken by themselves, with difficulty be distinguished from some of the cell forms of scirrhus cancer.

This is especially the case in that form of indigenous cell,

designated by Paget as "brood cells," where more than one nucleus is seen enclosed in a mother cell, as is usually the case in hard cancer. In some of its more mild manifestations, epithelial cancer can scarcely be distinguished from an ordinary warty growth, such as that which is common enough on the hands of young persons. In both may be observed the masses of clustered, more or less flattened, epithelial cells, lying upon each other concentrically, like the layers of an onion, with little or no fibrous or connective tissue, and forming by the intimate adhesion of the cells themselves a very tough, hard resisting mass. It is only by the persistency and recurrence of the growth, the pain which attends it, its gradually spreading beyond the site originally affected, and its effects upon the general health that epithelial cancer can be distinctly diagnosed. In many cases the disease is said to become developed out of so called benign warty tumors, which are consequently usually suspiciously viewed by practical surgeons. And it may be said that the more closely adherent, hard and slow growing the tumor, the less disposed it is to ulcerate, and the less painful in its manifestations, the less dangerous its character may be estimated to be; while, conversely, the more loosely its cells are held together, and the more disposed it is to become disintegrated and to form an ulcer, the more rapid is its course, and the sooner do the lymphatic glands become affected. I find some cases recorded in the "Transactions of the Pathological Society of King's College Hospital," (to which I was allowed access by courtesy of G. G. Tyrrell, M.D., F.R.S.,) in which the amount of fibrous stroma produced by the development of fibre-cells in the mass is so great that the disease assumes a more doubtful pathological character, and may be assigned to another place in the classification of pathologists, more closely approaching to the scirrhus form of carcinoma. Dr. Clark, in his monograph on the diseases of the tongue, states that he believes some cases of so called scirrhus, to have been of this kind. Again, the disintegration of the cell growth may be so rapid that the features of the disease may assume

the form of an open ulceration of a malignant character rather than that of a tumor; and many such cases I doubt not have been denominated "Cancerous Phagedæna." In conclusion then, I would say, that as a general thing the more advanced and minute pathological observations become, the less disposed are practical men to draw any broad line of demarcation between these diseases. In well marked cases the signs are plain enough; but at a time when diagnosis is most valuable, the indications are usually the most slight.

To remove the disease, the least painful, most manageable, and most effective plan is no doubt by the application of the knife. Caustics in this situation work too slowly and superficially, and too painfully and uncontrollably to be valuable in any other way than as secondary to the absolute removal of the diseased mass. Used in this way, they are of great value, and were employed by me in the cases I have had in the form of a solid or saturated solution of the chloride of zinc, sometimes combined with the perchloride of iron, and frequently applied to destroy any remains of the disease which may have escaped the knife. The latter has also the additional advantage of stopping any bleeding that may still further lower the resisting powers of the patient to the invasion of the disease.

In most of the books I have been able to find, the operations for the removal of the tongue, or any part of it, has been considered as one of those in which the blessings of anæsthesia could not with safety be afforded to the patient, for the reasons that will be at once apparent, viz: first, the removal by the anæsthetic agent of the voluntary assistance which the patient can render in all operations upon the interior of the mouth, by keeping the jaws and mouth wide open and the tongue steady; and secondly, the supposed danger in profuse bleeding into the pharynx of suffocation, by the blood passing into the larynx and trachea. It is very evident that if we cannot in these cases offer to our patient a means of relief, unattended by immediate pain, and that of a most severe character, at least half of the advan-

tages of and inducements to the treatment involving such an operation are thrown away, and the patients will be naturally indisposed to listen to the only promise of relief which can honestly be held out to them. If then we can render by any means the necessary operations painless, we confer, I think, a boon upon humanity not by any means small, to the poor creatures thus afflicted. After some little contriving I made a gag, which I think meets every case, and enables the surgeon to use anæsthetics with some degree of safety. It consists of four teeth plates, which act on both the upper and lower bicuspids by means of a pair of powerful cross levers, placed outside of the cheeks, and opening independently of each other by a screw on each side through a simple hinge joint. Having thus obtained the necessary control of the movements of the patient's lips and jaws, during the insensibility produced by chloroform, we have only to look to those precautions which are usually found most efficacious, such as turning the head down to one side and clearing the throat with the finger. If the knife is to be used, I have found it to be the best plan to pass two stout ligatures through the base of the tongue, by means of a curved needle—these ligatures are held by an assistant. By this means we have the tongue extended to its utmost limits, and by being widely placed they prevent the turning out of sound fleshy substance, which is very apt to be the case when the ordinary vulsellum forcep is used. If the tumor is likely to be very vascular, as may in some measure be divined from its appearance, I deem it prudent to pass a broad ligature across the ranine arteries, under the base of the tongue, by means of a curved needle; this controls the hemorrhage until the cut ends of the vessels have been secured. The tumor is next seized by a pair of stout double toothed lion forceps, and then a curved, sharp pointed vistoury is used to transfix the tongue close to its base, and to cut first antero-posteriorly, and then laterally across the vessels and nerves, until so much has been cut as will suffice to rapidly clear away the diseased mass. In

securing the arteries, much steadiness on the part of the assistant is required. The muscular substance of the tongue is so friable, under the circumstances, that it is readily broken down by too much vigor in drawing the knot; while the depth at which the cut vessels lie from the surface necessitates dexterity in slipping the thread over the forceps, the points of which should be conical and taper quickly to the end. The proper tying of the vessels, and the prompt application of the tincture of the percloride of iron and cloride of zinc, by a strip of lint tied round a stick, will render the use of the arterial cautery rarely necessary to subdue the hemorrhage. In conclusion to the pathology and cure of the above disease, I will give two cases which I have had during the last year: In February, Albert Stanchfield came to my office for treatment; he had noticed pain and soreness in his tongue, so long as ten years ago. Thinking it was irritated by the molar teeth on that side, he had them extracted four years ago, although they were perfectly sound; twelve months before he noticed, for the first time, that it was rather swollen and hard. The pain becoming worse six weeks before I saw him, he began to emaciate, and the cancer got rapidly larger and more painful, and the ulceration spread further. On examination I found a tumor about the size of a small egg on the left border of the tongue, hollowed out in the middle by an extensive ulceration, covered with an ash colored slough, and surrounded by fungus raised edges, with a very fetid discharge—frequent hemorrhages had occurred from the middle of the sore. A sub-maxillary lymphatic gland could be felt, enlarged and hard on the same side. There was a copious and distressing flow of saliva, and the poor man suffered excruciating agony both night and day; the effects of loss of sleep and suffering speedily became visible in his rapid emaciation and weak accelerated pulse. On the 9th of February, under chloroform, and aided with the gag I have described, I removed two-thirds of the tongue, cutting clear of the tumor, and afterwards taking away considerable portions which appeared

to me to be rather suspicious in *feel* and appearance. Free hemorrhage occurred from the numerous vessels, which was with difficulty controlled, the substance of the tongue being exceedingly friable, and giving away easily under the ligatures. The chloride of zinc and the perchloride of iron were freely applied, both separately and in combination. A blackened slough was formed all over the sore which, after some days, came off, showing a smooth healthy and regular healing surface. The sore rapidly healed after a few applications of the solid chloride of zinc, which was employed to smooth down all irregular granulations; and on the 2d of March, the man, looking vastly improved in health, free from all pain, and able to eat and speak with more comfort than he had had since the disease appeared, was discharged with the sore almost healed, at his own request, in order to look after his business in the country. The second case I will bring to your notice, was a well marked and advanced specimen of the disease of the tongue under consideration; it was sent to me by a Dr. in Auburn—a man aged forty-five, a delicate man, evidently much worn by suffering and interference with the taking of food. On opening his mouth I observed a large solid tumor of the size of a hen's egg, embracing the whole of the left half of the tongue, commencing, as in all other cases, opposite the bicuspid and anterior molar teeth. The surface of the tumor was covered with a deep ulceration, with deep ragged raised edges, and deep sloughy-looking fissures, and exhaling a very offensive odor and putrid discharge. There was no affection of the glands apparent on careful examination; but the patient complained of deafness and much pain in the ear of the same side, probably from implication of the gustatory and chorda tympani nerves. He had great mechanical difficulty in mastication and deglutition, and has at times lost much blood by hemhorrage from the ulcerated surface of the tumor; pain, want of food, and hemorrhage had reduced him to a distressing condition. The disease in this case commenced only in December, and pursued a much more rapid course than any other that I have been able to

find any record of. It began at first as usual with a decayed tooth. As it was so near the annual meeting of this society, I thought if it were possible I would try and keep the case along, in order that we might get some clinical instruction from it, so I put him on a preliminary course of iodide of potass and tartrate of iron, touching it with solid chloride of zinc twice a day; but as no relief resulted from this treatment, and the poor man was getting gradually thinner and more cachectic from the constant wearing pain day and night, and the interference with his power of masticating food, I dared to delay no longer, and I operated two weeks ago. Much relief followed this operation, which was attended with comparatively little hemorrhage. It is astonishing how rapidly the patient is recovering from this operation; freedom from pain, undisturbed rest at night, improved appetite, and revigorated digestive powers, account for this satisfactory result.

Dr. Bunnell read the following report on

DENTAL THERAPEUTICS.

Mr. President and Gentlemen of the California State Dental Association: Being the first-named member of the standing committee on Dental Therapeutics, it may be expected that I should have something to say upon that subject. Inasmuch as I have nothing to offer you that is new, nothing but what you have all read in the dental journals, or have introduced in your daily practice, it would seem to be superfluous and profitless for me to repeat to you what you already know.

A dental therapeute is one versed in the treatment of diseases of the oral cavity, for the purpose of restoring to a normal condition all the diseases or abnormal conditions incident to the several organs of the mouth. We first start with the deciduous teeth of children. These should be treated in a manner—so far as we are able to best preserve them—to ensure as near a perfect development of the second dentition

as possible. We often see a cramped or contracted condition of the alveolar arch, in consequence of the too early extraction of the milk teeth. They should, therefore, as a general rule be preserved as long as possible; should be examined often, and when decaying, promptly filled. If one of these teeth becomes ulcerated (as we say) it should be promptly removed, as by this ulceration the permanent tooth, which is in process of eruption, is liable to be injured by the inflammatory action incident to this condition of the deciduous tooth, or rather the periosteum surrounding it. We often see the teeth of the second dentition, and also the first, appear in an irregular or crowded condition, one tooth impinging upon another. The practice has too often been for the dentist to seize one of these unfortunate members with the forcep, for the purpose of making room for the adjacent teeth. When a tooth is erupted it never grows laterally—it is then as wide as it will ever become; while the alveolar as well as the maxilla continues to grow broader with the growth of the child, to an extent generally sufficient to allow the teeth of the second dentition to assume a regular position in the dental arch. When the second tooth is sufficiently erupted to displace the milk tooth, the latter should in all cases be removed. Having so far disposed of the deciduous tooth, our next care is to preserve the permanent ones. When decay commences, the tooth, if promptly filled in a proper manner, is no more liable to further decay, than is a sound tooth in the same mouth; and if filled with gold, I hazard the opinion that through some action, either chemical or electrical, between the filling and the tooth, the tooth substance becomes harder or more dense, and is therefore less liable to decay.

The six-year molars are usually the first to command our attention. They should, as a general rule, be preserved as long as possible, for reasons apparent to you all. If teeth are placed under the treatment of a competent dentist during the early stages of disintegration from caries, if the tooth structure is passably good, it is by no means difficult, with proper care, for such dentist to save it from further decay. If a pa-

tient comes to us with an aching tooth—and they too often come only at that time—having used all your art to restore the tooth to a normal condition, and having succeeded in doing so with considerable expenditure of time and trouble, if you charge for the extra time expended, you are met by the assertion, "Why, Dr. so and so fills teeth for one dollar and upwards, and warrants them for life." If you say to this individual, "there are several of your teeth that require filling," you are always met by a look of astonishment and incredulity, with a very positive remark, "Why Dr. they have never ached," and you feel relief when fairly rid of the person, until another tooth aches.

It has been the practice of the profession until recently to destroy all, or nearly all, exposed pulps before filling. When this is done it is often only a matter of time when periosteal inflammation causes the loss of the tooth. Of course there are exceptions.

Experiments are now being made, with some promise of success, to cause the growth of secondary dentine, or something analagous to it, to form over the exposed pulp, or when it is nearly exposed. It is believed that in some cases this has been accomplished. Great success has within the last year or two attended some methods of saving the pulp alive, even when fully exposed, and thereby preserving the full vitality of the tooth. I will give you my method of treating them for the past year. I have so treated quite a number, and so far as I *know* not one so treated has failed of success as yet—how soon I may be compelled to change my opinion I am unable to say.

I prepare the cavity, carefully removing whatever substance may remain upon the pulp. If this happens to be wounded, it usually bleeds but little, and soon subsides without the application of a styptic. I then fold a piece of bibilous paper once, of sufficient size only to cover the pulp and bottom of the cavity; saturate this with creosote, sufficiently to cause a small quantity of tannic acid in powder to adhere to one side of it, which is placed in position and covered with cement

plomb. After this sets sufficiently hard, remove the upper portion of it, and if no uneasiness of the tooth ensues proceed to fill it in the usual way. This method may be no better than others that have been adopted, but I believe if it is carefully performed it will usually prove a success.

I have tried this method as an experiment upon another condition of pulp. Some three months since I filled a nearly worthless shell of a tooth in this way, covering a fungus growth of pulp nearly the size of an apple seed. It was wounded by the broach, and bled quite freely, but was not sensitive. I applied a styptic, when the bleeding subsided. I proceeded to fill as before stated; no disturbance has as yet resulted. It is needless for me to travel over the broad field of therapeutics; other methods of preserving the exposed pulps of teeth are represented to be successful, and of course those who succeed by their own peculiar methods will have no occasion to try this method. Should other methods fail I would recommend the trial of this.

DISCUSSION.

Dr. Dutch—I would like to ask Dr. Bunnell if he has seen that patient since he made the application to the fungus growth?

Dr. Bunnell—I have; within four or five days.

Dr. Dutch—I merely asked the question, because sometimes we make applications and think, because we do not afterwards hear from the patient, that it has had the desired effect.

Dr. Bunnell—I asked him particularly if he had felt any uneasiness in the tooth, and he said he had not.

President Knowles—I should not myself have dared to adopt the course of treatment which the doctor did. To me it is new; I think it is an experiment, and can be considered in no other light. I see no underlying pathological reasons

for such treatment, and I do not know that the doctor bases his treatment on anything more than the circumstances of the immediate case, as an experiment.

Dr. Bunnell—I only so regard it, and did at the time I made the application. The tooth I considered a worthless one, and should have been extracted. It was broken down on one side, so that the fungus growth lay even with the gum, or nearly so, and it was surrounded merely by a shell. I am sure it was a fungus growth of the nerve tissue. There can be no mistake about those growths.

President Knowles—Well, I have often been deceived by them. What I thought to be a fungus growth of the nerve tissue, I afterwards found to be the gum itself protruding through the teeth.

Dr. Bunnell—In this case the growth was entirely distinct from the gum; the wall of the tooth was outside of it quite a distance. It was a superior molar, and I know positively that I can not be mistaken in regard to the growth. It was not nerve; it did not appear to be sensitive at all when the broach struck it; it bled freely. Had it been a nerve proper, with full vitality, of course when I pricked it it would have disturbed the patient very much.

The Executive Committee made the following report:

Officers and Members of the California State Dental Association: GENTLEMEN—We have examined the report of the Publication Committee relative to the publication of our Transactions, Constitution, By-laws and Code of Ethics, and find it correct. We find that the committee have had printed three hundred copies of the Transactions at a cost of $468 50; that they have received from advertisers $120 00, and from sales of Transactions $111 00—leaving a balance yet due the committee of $237 50, which amount we would recommend be raised by levying an assessment of five dollars on each member; members paying said assessment to have a *pro rata* credit on their dues from the annual sales of Transactions.

We have also examined the books and vouchers of the Secretary and Treasurer, and find them correct. The Treasurer's books show as follows:

CASH—DR.

To balance on hand commencement of last session	$ 40 00	
To receipts of last session	265 00	
To receipts since last session	30 00	
		$335 10

CASH—CR.

By disbursements last session	$181 75
By disbursements since last session	105 30
By cash on hand	48 05
	$335 10

All of which is respectfully submitted.

W. S. DAVIS,
J. L. COGSWELL, } Executive Committee.

Report adopted, and assessment levied.

Dr. Bunnell read the following voluntary essay, entitled

ANÆSTHESIA.

The subject of Anæsthesia, both local and general, is one that to a great extent has occupied the minds of surgeons and dentists for many years.

The word anæsthesia indicates an agent that renders a person insensible to pain. It is not my expectation to advance any new ideas upon the subject; it is one that should be, and I presume is, familiar to you all. My object is simply to induce a discussion upon the merits of the most general articles used by our profession, in order to lead to the adoption of the one that, all things considered, will produce the desired result with the least danger to our patients. It is a subject of great and grave importance to those who are called upon almost daily to perform operations more or less painful, the

thought of which produces an unconquerable horror in the minds of very many persons who apply to us for relief. I shall therefore speak of the three substances known as chloroform, sulphuric ether and nitrous oxide. The latter substance, manufactured in a crude form and administered in an imperfect way, was noticed by "Sir Humphrey Davy" about the year 1800; after many experiments he predicted its eventual use for the prevention of pain in surgical operations. To "Horace Wells," a dentist, belongs the credit of verifying this prediction, although its extended use is of comparatively recent date.

No doubt it has in some cases been greatly abused, in consequence of the imperfection in the apparatus for generating and administering the gas. It has been asserted that it may be used with perfect impunity in all cases, even if the patient is suffering from disease of heart, lungs, or from *any* organic disease. I consider this to be an attempt to prove too much for any substance that will produce perfect anæsthesia. Although the gas is purely oxygen and nitrogen, the elements of the air we breathe, yet we are aware that there is great difference between a *mixture* of these elements and a chemical combination.

With this combination it is necessary to exclude atmospheric air—with chloroform and other this is not admissible, for without air respiration could not be sustained. But as respiration is fully sustained during the administration of nitrous oxide, it proves it to be more nearly normal to atmospheric air. There is doubtless a tendency of blood to the head to some extent during its inhalation. I would therefore consider it unsafe, the same as I would chloroform and ether, where there is a tendency or predisposition to apoplexy or inflammation of the brain.

It has been considered to be one of the laws or effects of stimulation that it is always followed by a corresponding or proportionate depression. This is undoubtedly the case with chloroform and ether, but is not so with nitrous oxide.

The preparation of the gas is very simple, with proper

apparatus and proper caution; I would always use a double valve inhaler, attached by a hose of large caliber, directly to the reservoir of gas, so that a free large column may pass directly to the patient. In this way the respiration is free, whereas if the column of gas is small the respiration is more or less labored. An inhaler, with a mouth-piece in the center to pass between the teeth, leaves the mouth open for the operation when anæsthesia is complete.

Now let us examine the components of this substance. It contains only those of atmospheric air, nitrogen and oxygen, chemically combined—the air in its natural state being a *mixture* of nitrogen by weight 76.90, oxygen by weight 23.10, by volume 79.20 and 20.80. By chemical combination of these elements, the proportion is changed to an atmosphere about once and a half the weight of air, and contains nitrogen 63.6 per cent., oxyen 36.4 per cent., or in chemical notation, atoms 1 and 1—equivalent, nitrogen 14, oxygen 8.

Anæsthesia is supposed to be produced with it, by supplying the system with carbon more rapidly than it can be eliminated. The patient passes quickly into a perfect state of anæsthesia, which is always plainly indicated. The condition is of shorter duration than that produced by chloroform or ether. The functions of the body are slightly exalted, and respiration fully supported. After the lapse of from two to five minutes, the patient is in as perfectly a normal condition as before inhaling it. It is generally believed that any substance that produces immunity from pain is followed by a corresponding penalty. This I believe is not the case with nitrous oxide, but we all know it to be more or less so when chloroform or ether is inhaled. We can only judge of the merits of each by actual experiment upon a great variety of temperaments and conditions, considering also the component parts of each and their general effects. It has been asserted that the gas affects only the nerves of motion, and that the patient suffers all the pain without the ability to move. In some cases this may be so. It is equally true that the reverse is more generally the case, the sensory nerves being affected

to a greater extent than the motor nerves; the former may occur from one of two reasons only—if the gas is impure, or deteriorated by the admission of atmospheric air, that condition may occur.

That many fatal results have followed the inhalation of chloroform, no one pretends to deny. It will not do for us to say that we have administered it many thousand times, without accident or detriment to our patients, for we may not be aware of the condition produced by its administration upon the nervous system, whereby the health may be impaired for life.

Again it is a well established fact that persons have inhaled it many times with apparent impunity, and death has been finally produced before perfect anæsthesia has been obtained, and this too when no reasonable cause could be assigned. Statistics show us that these results have more frequently happened with persons in perfect health, so far as relates to any organic disease, than otherwise. In a table published in the *New York Journal of Medicine*, about the year 1864, it is stated that three died instantly, two in a minute, ten in from two to ten minutes, one in a quarter of an hour, one in half an hour, one in three hours, and the remainder in periods varying slightly from those above mentioned, to the number of thirty-three. Up to that date the recorded list of fatal results ascribed to chloroform amounted in the aggregate to more than one hundred. Now taking it for granted that we are willing to take the chances of producing death during an operation, what have we to fear beyond this?

Chloroform—or properly, ter-chloride of formyl—contains 12 parts carbon, 1 part hydrogen, and 10.5 parts chlorine. When inhaled it is rapidly transformed in the blood, producing *formic acid*, which acts upon *it* as a poison; and having a strong affinity for the blood, it may remain in the circulation sufficiently long to produce effects upon the system which may and often do prove highly injurious. One thing is certain, the poison is transmitted to the circulation, and if anæsthesia is produced, it is no matter by

whom or how carefully it is administered, the poison must be there.

Chloroform was discovered by Samuel Guthrie, of Sackets Harbor, N. Y. Its chemical constituents were ascertained by "Dumas" in 1834. In its general influence it is sedative primarily to the nervous system; and secondarily, to respiration and circulation. It is absorbed by the blood, and has been detected both in the blood and tissues after death. If pushed beyond the stage of coma and complete muscular relaxation, respiration becomes diminished, the pulse feeble, the face livid; finally respiration ceases, and also the heart's action—death being the result. When a very small quantity has been inhaled, death has been known to ensue by local paralysis of the heart, and in some cases respiration has continued after the heart has ceased to beat.

In regard to the after effects of the two substances—chloroform and ether—although the latter as well as the former produces langour, attended often with nausea and other disagreeable consequences, sometimes lasting for days, I would assuredly give the preference to ether. The component parts of the latter are: 24 parts carbon, 8 parts oxygen, and 5 parts hydrogen. When inhaled, it is decomposed in the system, forming *acetic acid* in the circulation, which is neutralized or passes off by after breathing, leaving no injurious substance in the blood.

During the administration of nitrous oxide, it has been suggested that the purple appearance of the lips indicate a tendency to asphyxia. This cannot be true, for the reason that *respiration* is fully supported.

Statistics recently collated by Professor E. Andrews, published in the *Chicago Medical Examiner*, gives the following estimate of the relative danger in the administration of different anæsthetics; in 200,893 cases, viz:

Sulph. ether, one death in 23,204 administrations.

Chloroform, one death in 2,723 administrations.

Mixed chloroform and ether, one death in 5,588 administrations.

Bi-chloride of methylene, one death in 7,000 adminstrations.

Nitrous Oxide, no deaths in 75,000 administrations.

I do not wish to be understood to favor anasthetics of any kind, to be used generally in our practice; yet, I believe there are cases where it is admissible to use other than local anæsthetics. I believe these cases are few, and that proper discrimination should be made when they are used. I simply desire to give the preference over chloroform and ether to nitrous oxide, when either is admissible.

N. B.—Some portions of the foregoing I do not claim to be original, they having been taken from publications that have appeared upon the subject; I have used such as best express my views.

DISCUSSION.

Dr. Warner—I would like to ask Dr. Bunnell what classes of patients he refuses to give nitrous oxide to, and how he has patients inhale it?

Dr. Bunnell—I administer it by giving a free, full volume, so the respiration will not be labored at all; the patients can not pass into the proper condition too quickly. I would always be particular to make inquiries whether the patients were predisposed to apoplexy or heart disease, and if I mistrusted anything of the kind I would not administer it, even upon their statement to the contrary, because I know they often say they are free from such troubles when they are not. I would be very particular to examine the pulse in all cases before giving any anæsthetic, and cautious in its administration; yet, as I have said, I believe that chloroform will kill sometimes where there is no organic disease of any kind apparent.

Dr. Warner—Does the age of the patient make any difference?

Dr. Bunnell—Not if the person were in good health.

Dr. Warner—Are what you have mentioned the only cases where you refuse to administer it?

Dr. Bunnell—I do not consider it would be particularly dangerous for a person having consumption to inhale it. I would not hesitate to give it in cases where the lungs were somewhat weak, but I would give it with caution.

Dr. Roberts—Have you ever administered it where physical prostration was very evident from any disease, or from other circumstances?

Dr. Bunnell—I can not say that I have, because if a person were in a low state of health, any anæsthetic would not be advisable; in fact, I get along without any anæsthetic whenever I can. I never talk anæsthetic to a patient, but wait for them to urge me to administer it, because in ninety-nine cases in a hundred we can get along better without it, having better control of the patient, and by persuasion we frequently avoid its use. If I had a very severe operation to perform, one that would produce a great reaction in the system, why I would perhaps recommend it, but not otherwise.

Dr. Warner—Would you give it to a strong healthy man three or four times in succession, to take out say fourteen or fifteen roots?

Dr. Bunnell—I would, without any hesitation whatever.

Dr. Dutch—How do you account for the livid condition that is said to be exhibited by a patient who is taking gas?

Dr. Bunnell—I am not able to say. I know that such is the case; but it immediately passes away when you discontinue its administration; it lasts only for a moment.

President Knowles—Is it not a sort of asphyxia that is produced by an abundance of carbon or carbonic acid?

Dr. Bunnell—I think it may be a condition approaching

asphyxia that causes it, and I have no doubt if it were continued long, when the patient has passed into that state, it would prove fatal; but all anæsthetics should be administered with discretion.

Dr. Lane—Do you consider that livid manifestation an unfavorable one?

Dr. Bunnell—If carried too far it is unfavorable; but, as I said before, it rapidly passes off when you stop administering it—that is, usually, when anæsthesia is complete. You will see that condition often, perhaps generally with nitrous oxide; you discontinue the administration then, and before you get through the operation that condition always passes away.

Dr. Lane—You always discontinue when you see that livid appearance of countenance?

Dr. Bunnell—Not instantly. I would not stop because I saw that livid condition; I would go on until the effect was complete. That condition used to alarm me when I commenced to give nitrous oxide; but we have the statistics to show that people do not die from it.

Dr. Dutch—Have you ever seen a patient in whom you could not produce anæsthesia with nitrous oxide?

Dr. Bunnell—I never have, provided the oxide was pure. I have had two cases where I have failed to produce that effect, but that was long ago, and I ascertained that the gas had been weakened. It stood upon water, as you know, and it is not a stable gas unless you can confine it hermetically sealed in a metallic case. If it stand on water, where the water becomes impregnated thoroughly with the gas, it will take the air from the outside, and be weakened from the inside, and the gas will very soon become deteriorated. If the water is thoroughly charged with gas, you should never change it, and it will be perfectly sweet for years; there is

no necessity for changing it. It will become filled with gas so that some escapes, but not of sufficient quantity to render the gas inoperative or ineffective.

Dr. Lane—Have you not found some patients so excitable or so agitated during the administration that the gas failed to act decidedly upon them; and the anæsthesia, if produced at all, was of such short continuance that it was necessary to reproduce it very frequently when there was much to be done?

Dr. Bunnell—If patients are very much frightened and resist, is it sometimes very difficult to get them to inhale the gas freely? Patients will resist it in every possible way, but if you can get them to receive it freely, there is no trouble of that kind.

Dr. Lane—Do you consider the difficulty in producing anæsthesia in such cases to arise from the patients' not inhaling a sufficient quantity of the gas, or from their being so nervous that it fails to act upon them?

Dr. Bunnell—I think that if you get the gas into the lungs, you will not fail to produce the effect, provided the gas is pure and of the right quality.

Dr. Dutch—I indorse a great many things that Dr. Bunnell has stated, and I differ with him in some. I agree with him where he says we should use a great deal of judgment as to what our patient tells us, when they want an anæsthetic administered. I have had patients tell me a great many falsehoods under such circumstances. I do not administer it simply because it is asked for—only when the peculiarities of the case demands it. In slight operations, if the patient will not consent to have them performed without an anæsthetic, I frequently dismiss them.—[The Doctor here related several cases where patients had attempted to practice deception on him, by telling that they were free from heart disease, etc., when they were not, showing the neces-

sity of the operator not always relying on the patient's statements, but using every proper precaution regardless of what *they* may say.] I also differ with Dr. Bunnell in regard to giving gas to consumptive patients. Then in regard to giving the gas to a patient three or four times in succession, I would decidedly object to that for a good many reasons: First—According to my observation, if it is given a second time, the effect is of much shorter duration than the first; the blood does not get up a thorough circulation, therefore I object to it. Those who were present when the gas was administered before this Association last year, observed that livid hue; and every one who noticed the administration at that time knows that the effect was a great deal shorter when it was repeated; therefore, I would object to giving it that number of times in succession. If I fail in completing the operation after the second administration, I always tell the patient to come in the next day, or at some future time. I will not administer it three or four times in succession, because I do not think it is prudent.

Dr. Bunnell—If a person were far gone with consumption, I would not think of administering any anæsthetic whatever to them; but if there was only slight affection of the lungs, I would not hesitate. And in regard to administering it several times, I have never seen a case where it was necessary to give it more than twice at one sitting. I have taken out nine teeth with one administration; but to do it you have to work rapidly—it will not do to stop.

Dr. Dutch—Well, I presume they were not very hard to extract?

Dr. Bunnell—They were exceedingly firm and badly decayed.

Dr. Dutch—I have taken fifteen out under one administration, but they were not difficult.

Dr. Dennis—I think nitrous oxide the safest anæsthetic.

If a large number of teeth must be extracted, and an anæsthetic must be administered, I think ether is the best. The great trouble with nitrous oxide, I think, arises from carelessness, laziness or ignorance, or all combined, in those who prepare it. If proper precaution is taken in preparing it, there is very little danger, if any, in its use. For instance, take the Colton Dental Association Rooms, New York, where they make it a business to administer gas; I believe they have never had a fatal case, and you would be surprised to go there and see the number of cases they have. I believe if we administer pure nitrous oxide there would be but very little danger indeed. If men must administer nitrous oxide gas, I think it is something they owe to themselves and the people to use all the precautions they know. If they can not take those precautions they certainly ought not to be permitted to use it.

Dr. Roberts—I rarely manufacture the gas oftener than the third time without changing the chemicals. First, I allow the gas to pass through two jars of water, which proves it—then I have it pass into two jars of chemicals, and into another of pure cold water, and then into the reservoir.

Dr. Bunnell—By way of explanation I will say I have never administered gas oftener than the second time to one patient, regardless of the number of teeth to be extracted. I have administered it three times at what some might term one sitting—in one forenoon or afternoon—but not in quick succession. I never repeat the administration without allowing from thirty minutes to one hour, and sometimes two hours, to intervene for the perfect restoration of the circulation, and the normal condition of the patient to be restored; in such case there is no danger. I administered the gas to one patient five times, for the extraction of fifteen teeth, but administered it but once a day; and after the first operation had the patient return on following days for other administrations. In such cases there is no danger whatever. I have a reservoir containing eighty-eight gallons of water

and one hundred and ten gallons of nitrous oxide, and the water has been, I think, four years and a-half without any change. As has been remarked, I think the water is better for age in the cylinder, and should not be changed; it diminishes but very little. I have an indicator which shows the exact depth of the water, and whether it diminishes at all or not. It has not diminished in the past two years the fourth part of an inch.

Dr. Lane—I have administered nitrous oxide gas as often as four times at one sitting. I do not frequently do it, but I have done it. I have never had anything unpleasant or unfavorable in the administration of nitrous oxide, and I always manufacture my gas without the caustic potash, washing it with cold water; I empty my jars every time I make my gas. I think that Dr. Bunnell says truly, that respiration is sustained during the administration of nitrous oxide gas. I have, however, met with intelligent English physicians and surgeons who attempted to say, and who tried to make me believe, that respiration was entirely suspended during the administration of nitrous oxide gas, or when anæsthesia was produced.

Dr. S. E. Knowles—I think that Dr. Lane is right in regard to the statement that the nitrous oxide gas does support respiration, and it is undoubtedly that peculiarity which renders it the safest of all anæsthetics. However, there is always a certain amount of danger in administering any anæsthetic. It is due to this fact: we find that although the anæsthetics differ in the detail of their action, still they all have the same general action; they seem to affect the different systems of nerves in the same manner. We have normally, when we administer an anæsthetic, first, the sensitive nerves affected; next, the motor nerves—and if it be pushed sufficiently far, the ganglionic nerves—that is the normal order in which the nerves are affected. We have in exceptional cases a variation from this order. There are cases on record where a patient

has died almost instantly after making one or two inhalations of chloroform; that is undoubtedly due to the fact that the ganglionic system is affected first. It is something that we never can provide against, and for the reason that the order in which the nerves are affected varies sometimes. There is always a certain amount of danger in administering any anæsthetic. I think that the fact that nitrous oxide does support respiration is an exception; I do not think that there is any other anæsthetic which does it. It may or may not be due to its chemical composition—that I am not prepared to make any statement in regard to—but certainly in addition to its anæsthetic properties it has this very fortunate power of supporting respiration; and, as I said before, it is undoubtedly due to this fact that less accidents occur in connection with the use of this than any other anæsthetic.

Dr. Younger—I wish to know if it is the habit of those gentlemen who have spoken to administer any anæsthetic without first examining the heart, either through the pulse or by auscultation, to see if there is any organic disease present. I have administered chloroform for over eighteen years in every variety of surgical operations. I have kept patients under its influence two hours, and I have never had any evil results from it. I think that if chloroform is administered with care, it is just as safe as any anæsthetic; but however mild the anæsthetic may be, it is highly culpable in any dentist to give it without first satisfying himself that the heart and the lungs are in a condition to receive it. I have been forced to give it occasionally where there was heart disease present; but I had one hand upon the wrist continually, so as to know when to stop administering it. I have extracted teeth where the pulsations of the heart were very bad, but yet it was necessary to administer some anæsthetic, and I have had no evil result from it.

Dr. Dutch—Cases are on record where death has been produced by the action of chloroform, so instantaneous in many cases, that if you had your hand on the pulse you

could not have saved the patient; for the best medical skill in the world has been in attendance when such deaths have occurred.

Dr. Younger—Do you mean to say there has never been a death resulting from the administration of nitrous oxide?

Dr. Dutch—I was not speaking of that. I say, having your finger on the pulse of the patient will not always relieve you of the danger.

Dr. Younger—You should first examine the pulse, and see that the heart is in good condition; then you can go on and administer your ether or chloroform or nitrous oxide.

Dr. Dutch—I maintain that gentlemen skilled in medical science say there is no criterion they can go by. The most skillful physicians in this city have told me that they have lost patients when carefully noting the pulsations.

Dr. Bunnell—I do not well see how Dr. Younger can make the assertion he has made, that chloroform is as harmless as any other anæsthetic, in face of the statistics we have; according to which hundreds are being killed with chloroform, and not one with nitrous oxide. How does he account for that? It could not be mere chance that kills in all these cases; it is the effect of the poison, if you please to call it so, that is administered. We had a case in this city where the lady had taken chloroform with perfect impunity, apparently several times, to have operations performed upon the mouth. She sat in the dentist's chair and inhaled chloroform three times, and she was dead. How do you account for it? She was a woman in good health. The story of having heart disease, and all that kind of thing, was folderol, for we made particular inquiry in relation to it. She was not a sick woman, but was in good health and good flesh; she was killed by three inhalations, and she had taken chloroform with perfect impunity several times before.

Dr. Younger—How do you know that lady was in good health?

Dr. Bunnell—Because people told me so upon inquiry; I did not know myself.

Dr. Younger—General report is of very little account in scientific matters like this; we want to be precise. How many persons look the very picture of health, and yet have organic disease, from which they drop down dead a few minutes afterwards. We can not tell except by personal examination whether a person is in good health or not.

Dr. Younger—And another thing. Perhaps no anæsthetic given has been so abused as chloroform; even physicians are careless in its administration. I claim, however, that a physician is no more capable of administering chloroform than is an educated dentist. Any one can administer chloroform if he will only take care to prepare the patient for it. Now I never give chloroform where there is anything on the stomach; I insist the stomach shall be empty. If it is to be a long operation I make them go without two or three meals, or take something very light. I object to the use of anæsthetics on general principles. I do not administer an anæsthetic once in two months. With the approved methods of extracting teeth that we now have, the pain is so slight that with a little persuasion you can induce four-fifths or nine-tenths of your patients to have their teeth extracted without the use of any anæsthetic. Another thing—if we would banish anæsthetics, it would be for the good of the community in general. Many persons will not suffer the amount of treatment necessary to cure an ulcerated tooth if they can have an anæsthetic administered and have the tooth pulled out. If you banish anæsthetics, people will go to the trouble of saving their teeth, and I think that the result will be that in a short time there would not be one tooth pulled out where there are a hundred now.

Dr. Dennis—It puzzles the best brains in the world to describe the action of medicine; it puzzles the best brains in the world to tell or describe the action of chloroform or ether.

I am surprised at Dr. Younger's remarks. Inasmuch as none can tell the action of chloroform, how can we go behind statistics? How can we get back of the facts and figures? Here we have any amount of statistics showing that chloroform has killed a great many more than ether; and I would like to ask Dr. Younger now if he does not suppose that the person who administers chloroform is as likely to use the same precaution as the man who administers ether for instance. He claims that if the necessary precaution is exercised, chloroform is as safe as ether. I claim that the same precaution is exercised with ether as chloroform, so that argument cannot stand. Chloroform is the most dangerous, ether next, and nitrous oxide next, as anæsthetics, that we use at the present day.

President Knowles—Well, how about the care and discrimination in the use of the nitrous oxide gas, which the statistics show has been administered almost ten times to one in the last ten years? Do the administrators of nitrous oxide exercise better care? Are they better discriminators in this matter?

Dr. Dennis—I am speaking of chloroform.

President Knowles—Yes, I know. But take the statistics of the use of chloroform at the one extreme, from which statistics show that deaths have occurred in the greatest proportion, and nitrous oxide at the other extreme, where the proportion of deaths are less, or disclaimed altogether—I say, is there greater discrimination exercised by operators with the one anæsthetic than with the other? The greatest number of deaths have occurred from chloroform, but are we to acknowledge that the gentlemen who use the nitrous oxide are the best discriminators, and exercise the greatest care and skill?

Dr. Dennis—I do not acknowledge it at all; I claim the majority do not exercise any care at all with it.

President Knowles—That is an argument in favor of your

proposition, as to the superiority of nitrous oxide as against any other anæsthetic.

Dr. Dennis—That is the position I take in the administration of nitrous oxide. There is no caution exercised at all in most cases; safety in its administration is taken for granted. They make no examination before or at the time they are administering it; they go ahead blind. Chloroform is considered dangerous, and those men who understand it best are careful to inquire into the matter before they administer it.

The President announced that Dr. Prather would clinic at Dr. Knowles' office at 1:30 o'clock P. M.

Adjourned to 2 o'clock P. M.

THIRD DAY—AFTERNOON SESSION.

Convened at 2 o'clock P. M., President Knowles in the chair.

Roll called, and minutes read and approved.

Bills to the amount of $129 read, and referred to Executive Committee.

Election of officers for ensuing year made special order for 8 o'clock P. M.

Communication from L. W. Taylor, relative to an "Improved Diamond Tooth Powder," was read, and on motion laid on the table.

Dr. Wood—*Mr. President:* I would say for Dr. Younger that he has gone home sick, and he requested me to have him excused for not being here this afternoon. He would have liked to discuss the subject of anæsthesia further.

President Knowles—Yes, I know he is interested in the matter a good deal. The subject of local anæsthesia was not referred to except very incidentally. I must acknowledge that, so far as I am concerned, except in some few cases, I use

no other. I have, as you know, heretofore been a supporter of local anæsthesia for such minor operations as are necessary in our profession, such as the extraction of teeth, the removal of nerves, and everything of that character; and in cases where general anæsthesia is demanded I recommend my patients to those who practice it, as I have neither the time nor the disposition to do it myself; still that does not involve any principle.

Dr. S. E. Knowles reported the following cases in his practice:

GENTLEMEN: Since our last meeting two cases of somewhat similar character have come under my observation, one terminating in complete and gratifying success, and the other unfortunately in inglorious failure.

Case One.—A lady, aged about thirty-two or three, having well marked V shaped deformity of both arches, alveolar plates very thin and frail, delicate shaped rather soft teeth, presented herself for treatment. Amongst the many cavities I found one on the mesial and one on the distal surface of the right superior lateral incisor. As is my custom in such cases I resorted to the slow process of wedging, and filled the distal cavity on June 18th; on the 1st of July following the operation upon the mesial surface was completed. Immediately following there was evidence of inflammatory action, tenderness on pressure, and pain. From day to day the tooth grew more and more moveable. Suspecting, after repeated tests, that the nerve was dead, and that alveolar abscess was threatening, I drilled in the direction of the pulp chamber, but desisted on account of positive evidence of a living nerve.

The tooth was now kept at perfect rest by means of ligature, and counter irritation employed. On July 5th there was profuse discharge about the neck of the tooth, and on passing the probe bone was plainly felt. During manipulations a small flake of the alveolus was detached, which gave a clew to the immediate cause of the trouble—death of a portion of the socket. This tooth was dressed every second day

with stimulating applications, after thorough cleansing, still being kept in position by ligature. This treatment was persisted in until July 22d, when, at the earnest desire of the patient, I consented to extract it, or rather allowed it to drop out. Upon examination I found the fang almost entirely denuded of pericementum, an annular sequestrum of bone adhering to it, by very loose attachment, and the pulp still living; the socket was as smooth as velvet, the whole surface being lined with granulations.

Case Two.—Also a lady, aged about thirty-six or seven, healthy, full habit, lymphatic temperament. On examination I found the first superior left molar to be dead, and filled with oxy-chloride of zinc. Shortly after taking her in charge, about the last of July, there arose, without apparent cause, a diffuse inflammation of the outer plate of the alveolus, opposite the left first and second superior molars; counter-irritation was resorted to without good effect, and on account of violent suffering, accompanied by well marked febrile action, four incisions were made through the soft parts, down to the alveolus. The tension being relieved there was subsidence of the fever, and local pain. Up to this time no pus had been formed, but on the next day the discharge was freely established; from this time the teeth became more and more moveable, until on the eighth or ninth day either molar could have been extracted with slight force.

During this time the entire plate of alveolus, from the anterior root of the first to the distal one of the second, had been broken down and lost, and the roots could be distinctly made out, either by means of a probe introduced at the margin of the gum, or by passing the finger over them on their buccal aspect. After the twelfth day the discharge steadily decreased under stimulating treatment, and the openings soon closed, with the exception of one anterior to the second molar at the margin of the gum; the gum became adherent, and much to my satisfaction the teeth became notably more secure, and the fullness on their buccal aspect more marked until, at this time, there is a decided fullness, even more than normal.

The contrast, as evinced by the results of these cases, has suggested to my mind a lesson, and my faith in the great recuperative power of the alveolus has been strengthened. There is no doubt but what many teeth are sacrificed by a too hasty resort to the forceps, to satisfy the wishes of a fretful patient, or as a quick and easy way to terminate an irksome and unpromising case.

I am at present disposed to believe that a removal of the sequestrum, and the exercise of a little more patience, might have entirely altered the termination of the first case; and if another similar one comes under my care, the tooth shall not come out until completely expelled by nature. I shall wait and watch with the fixed determination of having no unpleasant reflections.

DISCUSSION.

Dr. Dutch—I had some similar cases come under my observation. A gentleman had two incisor teeth, and when the case was presented to me pus was exuding from the gum very freely. I proceeded in the usual way, and found it was getting worse on my hands, with an evident disposition to spread. I thought I would help the matter by making a good incision there. After probing it I became satisfied that there was some necrosed bone. I found out from the man that he had been troubled with that same thing some three or four years before. I made some applications of chloride of zinc and iodine and such things, following the milder form of treatment, but it did not seem disposed to come under treatment. Afterwards I made an application of a preparation of sulphuric acid, and in a few days I could plainly see the necrosed bone had become detached. I opened the place and took the piece out; it was evidently the sequestrum between the two incisors. I have the case under treatment now. After making the application, the teeth settled back and got quite firm; still I did not use any violent means to see how firm they were, but I kept stimulating. I am satisfied the locality retards the recovery of the case. The trouble is, I have to

keep stimulating all the time, otherwise the pus would keep dropping and breaking down, but I am satisfied the teeth will do the gentleman service for many years. At first he thought he would have to lose them, and I thought it possible myself. I am not in a hurry to pull teeth, if I can save them in any way.

Dr. McCowen—I wish in this connection to report a case that has come under my observation since our last meeting. I was called upon to see what was the matter with the mouth of a child about nine or ten years of age. I found the mucous membrane of the mouth highly congested from the left superior central back to the first molar of the same side, with pus oozing out around the necks of the intervening teeth, or the fangs occupying their places. The second temporary molar was badly decayed. The first bicuspid was fully erupted, but showing no signs of decay; the temporary canine was slightly decayed, and a tooth having the appearance of a supernumerary, occupying the place of the left lateral incisor, was apparently sound; the teeth named were all very loose. From the condition of the parts I thought best to extract the supernumerary, and what remained of the temporary canine and second molar, and try to save the bicuspid, which I proceeded to do. I found the involved alveolus in a carious condition, and the roots of the extracted tooth very much shortened, apparently by absorption. The peculiarity of the case was in the condition in which I found the root of the left lateral, if we may call it such, it having much the appearance of that of a single rooted temporary tooth at the time of its first eruption, with the addition of a central part, which at first glance I thought was a completely ossified pulp, but which proved to be a thin shell enclosing the pulp canal. *Query:* Had the presence of a pulp retarded absorption of the walls immediately inclosing it, or was the peculiarity due to absorption, or was it defective development? I can hardly think it was the latter. In about two months, after treating the case with diluted chloride of zinc, the mouth was well, and the retained bicuspid quite firm, nearly as firm as the other teeth.

Dr. Dennis—This whole discussion goes to show that there is advancement. When the patient is sick, we must not send for the coffin; we can have the physician come, and he can apply the remedies and the patient may get well. You might say the same thing as to the teeth: A few years ago when a tooth was dead—no pulp, supposed to have no vitality—nothing but the forceps were applied in such a case. The more we get together and compare notes, and study the nature of the thing, the more we find we can save teeth that were supposed to be beyond salvation. The time is only a little way off when there will be a constitutional treatment for these cases, when the tooth can be reached by that treatment. I hope that every member who has not done it heretofore, will pay a great deal of attention to the saving of teeth which he once would have thought should be consigned to the hopper.

Dr. Dutch—By the kindness of Doctress Treadwell I am able to exhibit a couple of cases that may be of interest to the Society. I hope Doctress Treadwell will give us their history: This one [showing] is a temporary molar with the germ of the second tooth (bicuspid) between the fangs, and the other is from the opposite side of the same mouth. I understand that the first tooth I have referred to was abscessed.

Doctress Treadwell—The tooth with the second dentition I took from the mouth of a child about six years of age; it was very much abscessed—so much so that it was loose in the socket; I took it out at the request of the mother. She would have it taken out, as it pained the child; she refused to have it treated and filled; it had become very much inflamed. In removing it, the second dentition came out with the first. The second dentition was between the fangs of the tooth in its natural state; the crown of it being covered with a very thin formation of bone, and the point was a mere sac of milky lymph. The corresponding tooth on the other side was removed also; but the fang being healthy, there was no destruction of the second dentition.

President Knowles—The embryo of the second tooth is completely inclosed there, and is taken out with the first. It is rather an important specimen—very suggestive, at all events.

Doctress Treadwell—When it was taken out, the embryo was in a perfect form in a sac of milky substance, with a very slight formation of bone at the top. The child was nearly six years of age.

Dr. Dennis read a paper, written by Dr. Shields, entitled "Extraction of Teeth."

Dr. S. E. Knowles—Before we adjourn I desire to call your attention to a mechanical device. Most of the city members are already familiar with its workings; but to some of the gentlemen from other portions of the State, it may be new, and of a certain amount of practical value. Many of those using the new hand piece of the Morrison Dental Engine, have cause for much complaint, on account of the imperfect operation of the sleeve lock; to obviate this difficulty, I have devised a new method for securing the tool, which overcomes the tendency to dislocation while in operation. This devise is applicable equally to the old as the new hand piece, and may be utilized by you without alteration of the socket. It consists simply in cutting a slot, so as to allow the tool to rotate one-fourth of a revolution within the socket, and bring the lower border of the slot under the screw which is in the socket; while in this position the tool cannot be withdrawn by traction. For my own use I have in addition had the socket lengthened, and the extremity cut through longitudinally with a fine saw, thus forming four fingers, to give additional steadiness to the tool. In order to detach the tool, it is only necessary to rotate it one-fourth of a revolution in the reverse direction. This, with one or two points of minor importance, will be incorporated in the latest pattern of the Morrison Engine. Another alteration consists in screwing a brass thimble on the extremity of the hand piece, so that in case the opening

for the insertion of the tool becomes too large, a new one may replace it, allow the tool to run true, and give it additional steadiness.

Adjourned to 7 o'clock P. M.

THIRD DAY—EVENING SESSION.

Convened at 7:45; President Knowles in the chair.

Roll called and minutes read and approved.

Committee on Impeachment Charges against Dr. Ferguson report as follows:

Mr. President and Gentlemen of the California State Dental Association: The Committee on Impeachment Charges of Dr. T. H. Ferguson, beg leave to submit the following report: The accused was cited to and did appear before us, and declared that the violation of the Code of Ethics, by him, was committed without any knowledge of the existence of such rules in force by this body, and that in the future he will not be a transgressor of said Code of Ethics, and that he is willing and wishes to be continued a member of this Association; therefore, we recommend that the charges of impeachment be withdrawn.

For the Committee,

R. CUTLAR, Chairman.

Dr. Ferguson was present and substantiated the report of the committee. Report made a special order for 10:30 o'clock A. M. to-morrow.

The following report of the Advisory Committee was read:

Mr. President and Gentlemen—The Advisory Committee beg leave to submit the following report: The committee, after effecting an organization, by appointment met a committee from the Board of Regents of the University of California. After repeated interviews and discussions at some length your com-

mittee find it inexpedient and impracticable to make any arrangement looking to an affiliation with the University of California. The committee attribute their failure to make a more satisfactory report, to the fact that an incorporation of a Dental College *was* effected for the purpose of furthering negotiations ; which step they believe to have been ill advised, as it has proved to have disqualified the committee as such in their functions as an *Advisory* Committee. Owing to the embarrassments which they have encountered from various sources, in their endeavors to realize the cherished hopes of the Association, the committee regret that they are unable to offer a more favorable report, and most respectfully beg leave to be discharged.

R. CUTLAR,
J. J. BIRGE,
J. L. COGSWELL,
J. A. W. LUNDBORG,
E. F. BUNNELL.

Accepted, and committee discharged.

Hour of special order having arrived, the following were elected officers for the ensuing year:

President—H. H. Pierson of Sacramento.
Vice President—Wm. B. Kingsbury of Santa Clara.
Secretary—H. J. Plomteaux of Woodland.
Corresponding Secretary—H. E. Knox of San Francisco.
Treasurer—J. J. Birge of San Francisco.
Librarian—J. W. Winter of San Francisco.

Drs. Dutch and Dennis, Ex-Presidents, were appointed to conduct the President elect to the chair.

Retiring President Knowles—Gentlemen, allow me to introduce to you your President for the ensuing year—Dr. H. H. Pierson of Sacramento—and before I resign this chair, allow me to return thanks for the courtesies I have received at your hands during the time of my official connection the last year with you. Dr. Pierson, while I resign this chair to you, I expect you will fill it to the entire satisfaction of this body. You come to this position with the unanimous con-

sent of the members. In anticipation of as good a man as yourself—but not you in particular—I provided myself, sir, with a smell offering, which you will accept from me as a friend, and I hope that it betokens in its beauty and purity, and in the language of the flowers of which it is composed, the character which you yourself will sustain; and I hope, sir, that when you leave this chair it can be said that all your acts have been to the well being of this Society. [Presents a bouquet—applause.]

President Elect Pierson—Gentlemen, you have elected me to a position I do not feel competent to fill. My imperfect knowledge of Parliamentary rules and usages, and my failing health, will not permit me to preside over this honorable body as I would wish to; you must excuse me from even an attempt at a speech to-night, for had I at my command all the words to be found in Webster's Unabridged Dictionary, I could not do the occasion justice. I can only say that I sincerely thank you for this great honor, and ask that you will pardon any errors I may commit, as they will most assuredly be unintentional. My heart is too full to say more than thanks, gentlemen—thanks for your kindness. [Applause.]

On motion adjourned to 10 o'clock A. M. to-morrow.

FOURTH DAY—MORNING SESSION.

Convened at 10:15 A. M., President Pierson in the chair.

Roll called; officers all present except Librarian.

Minutes read and approved.

Ex-Librarian Birge reported that he had "caused to be manufactured in New York City, an album for the use of the Association, at a cost of forty-five dollars. It already contains the photographs of thirty-one members." Recommend those who have not had their photographs taken for the album, to

avail themselves of the very liberal offer of Mr. Watkins, 22 Montgomery street, where they can have them taken gratuitously for said purpose, and the Librarian can call for them at his convenience.

Bill of forty-five dollars for album, referred to the Executive Committee.

Dr. Hubbard offered the following resolution, which was adopted:

Resolved, That it is the duty of, and we hereby recommend to the Legislature of California, to pass a law making it a misdemeanor for any person, for any purpose whatever, who is not a graduate of some institution of learning, authorized by law to confer the degree of "Doctor of Medicine," or "Doctor of Dental Surgery," who shall place before or after his or her name in manuscript, label, wrapper, card, hand-bill, circular, newspaper, pamphlet, magazine, book, or any advertisement, the word "Doctor," or the abbreviations, M. D., D. D. S., or Dr., or any others signifying directly or constructively that the person is a graduate of such an institution; or who shall authorize or sanction the same by others in his or her interest; and that any person found guilty of such a misdemeanor shall be punished by a fine of not less than———dollars, or imprisonment for not less than———years, or by both such fine and imprisonment.

The case of Dr. Ferguson was taken up, and the report of the committee adopted. On motion the parties offering charges of impeachment against the Doctor, were permitted to withdraw the same; and Dr. Kingsbury, on behalf of Dr. Ferguson, withdrew his resignation.

Bills to amount of $174 10, reported correct by the Executive Committee, and orders drawn on Treasurer for their respective amounts.

Dr. C. C. Knowles offered the following:

WHEREAS, We learn with pleasure that a Dental College has been incorporated in this State; therefore

Resolved, That a Committee of Three be appointed to confer

with and invite the President of the California College of Dental Surgery to address the Association.

Adopted.

Drs. C. C. Knowles, Dutch and Cogswell were appointed a Committee of Invitation.

A unanimous vote of thanks was tendered the proprietor of Heald's Business College, for the free use of his rooms on the evening of the 10th inst.

Committee on Invitation reported that the President of the California College of Dental Surgery had consented to address the Association at 2:30 o'clock P. M., and said address was made the special order for that day.

The following letter was read:

SAN FRANCISCO, June 12th, 1874.

To the Secretary of the California State Dental Association—

DEAR SIR: In consideration of past liberal favors from the Dental Profession, we take the liberty of asking to be allowed to share a small portion of the expenses necessary in connection with the present session of your honorable body.

We have the pleasure, therefore, to enclose a check for fifty dollars on the Bank of California, hoping it will only be considered as an expression of kind regards and good will towards our friends of the Dental Profession all over this coast.

We are, ever yours, most respectfully,

J. H. A. FOLKERS & BRO.

On motion the donation was accepted, a vote of thanks extended the donors, and the Corresponding Secretary instructed to inform Messrs. Folkers of the same.

The Publication Committee were instructed to publish the Transactions of the present session, as soon as the necessary funds are furnished them to defray the expenses of their publication.

Owing to illness, President Pierson retired from the chair; Vice-President Kingsbury assuming it.

RESOLUTIONS OF CONDOLENCE.

WHEREAS, It has pleased Almighty God, in His infinite wisdom, to remove from our midst our late brothers, Drs. J. B. Beers and D. J. Nis ; therefore

Resolved, That in the death of Brothers Beers and Nis, the profession has been deprived of two of its active members, and the community of just and upright citizens.

Resolved, That we, the members of the California State Dental Association, deplore the grievous loss their families have sustained, and cordially sympathize with them in their great bereavement.

Resolved, That the Corresponding Secretary be instructed to forward a copy of these resolutions to Mrs. J. B. Beers and Mrs. D. J. Nis, and that a copy be spread upon the minutes of this Association.

WM. DUTCH,
J. W. WINTER,
HENRY E. KNOX, } Committee.

Adopted.

Dr. Eaton read the following voluntary essay, entitled

EXTRACTION OF TEETH.

Mr. President and Gentlemen: Having been appointed on two committees at former sessions of this Association, and not having contributed anything in the way of a report, leaving it to the Chairman—as many have been in the habit of doing before—I resolved that this year I would make at least an effort to contribute a few thoughts, well knowing that Mrs. Domby died just for the want of making an effort. The subject selected, "The Extraction of Teeth," is one that has not been written on or discussed by this Society in former years, perhaps because every member was supposed to know all about the *modus operandi*, and partly for the lack of anything new or novel, either in the way of instruments or methods of using them, for some time past. Notwithstanding that to be able to extract understandingly, requires an accurate knowledge of the shapes and peculiarities

of the different teeth, as well as the surrounding tissues. It has not been many years since the common practice was to remove all teeth that were troublesome, from whatever cause. At the present time, a dentist would not be considered worthy of the name should he consent to perform such an operation, if there was a reasonable probability of saving the offending member by a course of treatment, or until the patient was fully informed of the chances, and still insisted on its removal. In the treatment of diseased and aching teeth, there has been wonderful advances made in the right direction, especially on this coast, since the State Dental Association has been organized, and there is still room for improvement. Those that are farthest advanced in the profession are the ones who are most anxious to learn, and most willing to impart their knowledge to others. This is as it should be, and I am sure there is not a member of this Association that has not been benefited and repaid many times over for all the inconveniences and loss of time sustained by attending. One great reason why more diseased teeth are not successfully treated in the country is, that a large number of patients have been told by traveling quacks, that after a tooth once aches the quicker it is extracted the better; such an one, if persuaded to allow you to make an application to destroy a nerve, for instance, with instructions to return in twenty-four hours, many times will not be seen again for weeks; and, perhaps, would not come then if the tooth had not become sore and troublesome again, and they want it filled as you informed them it probably could be when you first saw the case. This time you are not so hopeful of success, as it may require several dressings before being in a condition to fill, and the result many times is, that the tooth is finally lost more through the patient's fault than yours; but you have all the blame to bear, and he is only strenghtened in his opinion, held from the first, and would be indignant should the fee be more than for the simple extraction. Before anything is done, every case presented should be carefully examined, in order to ascertain as much as possible the cir-

cumstances and surroundings that might affect the operation, so that a correct conclusion may be formed of the number and inclination of the roots, and the probable amount of force that will be required for their removal; also satisfy yourself which tooth is the real cause of the trouble, for many times the patient will locate the pain in the wrong one, that perhaps stands in contact, and may be affected to some extent, but which will cease to trouble on the removal of its diseased neighbor. The manner of operating is also of importance, as well as the selection of a proper forcep. I shall always remember the frantic efforts of an old dentist in the East, some ten years ago, in whose office I had just been employed as assistant: A gentleman took a seat in the chair, and wished a superior molar extracted; the proprietor selected a forcep, grasped the tooth, shut his eyes, and then began such a series of jerks and pulls as I never saw equalled, which continued until he was tired completely out, when he asked me to take a pull at it, as he had lost his grip entirely. Having come directly from an office where I had had the benefit of five years' instruction with a very cool and sure operator, had no trouble in breaking up the attachment by giving it the usual outward and inward motion. Much mischief is often done by such nervous operators, and accidents of a serious character occur, such as fractures of the alveolus and sometimes the maxilla, causing permanent deformity. A description of forceps suitable for extracting the various sizes and shapes of teeth, would be out of place here, a great deal depending on being accustomed to an instrument, and one that would come handy to me might be awkward to another. The great point is to have a good variety of different shapes and sizes, so that no trouble will be experienced in selecting one that will fit nicely any case that may present itself; then, after lancing the gum well, in such cases as require it, secure a deep hold, and don't get excited. Prof. Taft says: "A very good criterion is that the eye should critically follow, and the mind attentively comprehend every movement of the hand and instrument."

The forcep is considered by most operators the best and safest; but there are many cases where elevators, screws, hooks, etc., are of great assistance. The key is still used by some good operators; but having had no experience except as a patient, I am not prepared to say anything in its favor. To be able to extract well is a great help in securing patronage in other branches of our profession; for although it is usually one of the easiest labors we have to perform, it is dreaded more than any other by our patients. I have known at least one dentist, who, though no gentleman, and having but few warm friends, was sought for from far and near for his known skill in extracting. The indications for extracting are, in many cases, very plain to be seen at a glance. Temporary teeth that retain their place until the corresponding permanent ones appear, should always be removed; also temporary teeth that are in such a diseased condition as to do more harm than good if retained. I notice that Isaiah Forbes, D. D. S., in a paper on irregularities, advocates extracting all deciduous teeth that are presented which are badly decayed and aching, contending that the extraction of such teeth cannot possibly do any harm; but on the contrary, even though by an application we could alleviate the pain, their retention might injure the healthy growth of the permanent teeth. He says: "There is nothing so difficult to change as the impressions and prejudices of our early education. The more I have studied and reflected on this branch of the subject, the more have I become satisfied that the doctrine as taught in our dental text book cannot be correct. I also have the proud satisfaction of learning that Mr. Tomes, in his histological investigations has come to the same conclusion." He goes on to illustrate by mentioning a case in his own family, and in a long argument makes a good showing in favor of his theory. This calls out in opposition, a long article from H. L. Sage, D. D. S.; which theory is best, time and investigation will no doubt bring forth. I have followed the method laid down in our text books, and endeavored to save the deciduous teeth as long as they could

be retained, providing they are not in the way of the permanent ones. The matter of trying to save the first, or six year old molars, is another point of controversy on which much has been said both for and against. It seems to me that the Great Architect of the Universe must have placed them in their position, to be retained and made useful, as well as the twenty-eight remaining ones. It certainly is a serious matter to the little folks, when they have to submit to their extraction—all painful and diseased roots should be extracted. An incurable abscess is generally sufficient cause for extraction; or an abscess threatening to point on the outside of the face; also teeth that are so sore as to cause a continued avoidance of that side of the mouth in eating, if they cannot be cured should be removed.

Extracting for irregularities is sometimes necessary, but no rule can be laid down to govern such cases; great care and good judgment is requisite. In extracting for the insertion of artificial dentures it is often difficult to decide for the best, as to how many to remove, and how many to leave, and when our mind is once made up, it is often a hard matter to bring our patient to the same way of thinking.

In cases where a large number of teeth are badly decayed, so that the expense of saving them would be double or treble that of a plate, we are often obliged to extract against our wishes. To quote the words of another: "How far we can go in urging the preservation of such teeth; how much we can do to strengthen faith in the permanence of fillings; how much we may dictate to our patients as to what they can or cannot afford, and how much charity we shall bestow to induce them to undertake the best plan, are questions which each must decide as best he can in each case; only let me plead that in each case the decision be made with a sincere desire to promote the best interest of the patient, and not on the basis of our own self interest.

Adjourned to 2 o'clock P. M.

FOURTH DAY—AFTERNOON SESSION.

Convened at 2:15 o'clock P. M., Vice President Kingsbury in the chair.

Roll called, and minutes read and approved.

Dr. C. C. Knowles moved that the Publication Committee have full power to discriminate, without limit, regarding papers and discussions to be published in the forthcoming Transactions. Adopted.

On motion the Corresponding Secretary was instructed to tender G. W. Anthony, proprietor of the hall in which our daily sessions were held, a vote of thanks for his very liberal charges for the same. [The hall is known as Anthony's Hall, located at 417 Bush street, and was furnished to the Society four days for the small sum of five dollars.—SEC.]

A vote of thanks was also extended to the press of San Francisco for the very courteous manner in which they had reported the proceedings of the present session.

The hour of special order having arrived, Dr. Lundborg, President of the California College of Dental Surgery, addressed the Association as follows:

Mr. President and Gentlemen: I have been called upon to speak to you in regard to this Dental College. I offered, as a member of the Advisory Committee, a report which I considered covered all the points necessary for your information in regard to the affiliation of the Dental College with the University. I must admit that I felt a little embarrassed not to have that report received, because as an Advisory Committee we considered all the points properly and rightly stated. However, that is nothing now to speak about; I can only inform you, as one of the Trustees of the California Dental College, that we have made all kinds of overtures to the Board of Regents of the University of California as to the affiliation of this Dental College with the Uni-

versity, but we have so far failed. It has been a long and tedious negotiation that we have had with the Board of Regents in regard to this matter. It has not been satisfactory, and the Trustees of the College were not satisfied with the reply made to their propositions to the University in regard to the affiliation. We came to the conclusion to let the matter rest till the Association met again, and then state to you that we failed.

That really, gentlemen, is all that I can say or state. We failed to make any kind of affiliation with the University; we did not receive the reply to our propositions just as we expected; the matter dragged along slowly; they seemingly did not take any interest in it. However, we felt very much encouraged at the outset. I have the propositions that the Board of Trustees tendered the Board of Regents, and presuming you would like to hear them I will read them to you:

"The California College of Dental Surgery is hereby affiliated with the University of California upon the following basis, in accordance with the organic act of said University.

"The College of Dental Surgery will choose and maintain its own board of trustees, and will continue to hold its own property, and all such property as it may hereafter acquire, in the same manner as they would do if this affiliation had not been agreed upon.

"The College will appoint its own professors and demonstrators, and establish its own course of instruction, in accordance with the general approbation of the Regents of the University.

"The University will confer the degree of Graduate in Dental Surgery upon such candidates as may be recommended by a board of examiners of the College, and approved by a committee chosen by the Regents of the University.

"The University will furnish the College with the use of rooms in the Medical Department, for the accommodation of its professors, demonstrators and pupils, and also the use of such appliances as are necessary to teach and demonstrate the art of Dentistry, which are used in said Medical Department.

"This agreement may be canceled by mutual consent at any time, or by the withdrawal of either party to it, after twelve months' notice to the other party."

About three months afterwards I received this reply :

"OFFICE OF THE REGENTS OF THE UNIVERSITY,
San Francisco, December 20, 1873.

"To Dr. J. A. W. Lundborg, President, and Drs. E. F. Bunnell and R. Cutlar, Committee of California College of Dental Surgery :

"GENTLEMEN—At the last meeting of the Regents of the University of California, the following resolution was adopted :

"*Resolved*, That in the opinion of the Board it is not expedient to adopt the California College of Dentistry as an integral part of the University, but rather to affiliate it with the University in accordance with the law provided for such cases, and in accordance with the plan already pursued in the case of the California College of Pharmacy.

"I am instructed to communicate this resolution to you.

"I am, very respectfully,
"ANDREW J. MOULDER,
"Secretary of the Regents of the University."

That was the reply, gentlemen. We were not satisfied with it, and wanted to adhere to the propositions we had tendered. We have not done anything more in furthering this cause. We waited till this Association met, and we presented these propositions to you before.

I will give you our recommendations and views in regard to the matter: "To make such an institution a success, it must be pecuniarily maintained, not from public aid or State appropriations, but from the profession at large of this State or coast, and *particularly* from this Association. It must select and secure the best talent, men of experience and ability, to fill the different chairs as teachers. A college established under such auspices will throw luster upon our profession in this part of the world, and crown our efforts with success. The committee would therefore recommend that the Association create a fund, to be called the 'Dental College Fund,' to be used only for College paraphernalia and incidental expenses. When a respectable amount is in the treasury, sufficient to defray the expenses of a Dental College, even in the

most humble manner then, and not till then, will it be practicable to agitate the question in regard to the founding of a College in this city."

That is the recommendation, gentlemen, and it means just what it says: that the Dental College on this coast can not be supported or upheld, and it can not be a success unless we have money to carry it through.

Our negotiations with the Advisory Committee of the Board of Regents have been very pleasant; they encouraged us, but that is all. When we came together the point was money—business—"Have you something in your pockets?" Well, we had nothing, and, of course, we could not do anything. We incorporated because we thought it was best for us to do so, and we failed in making the affiliation. We did our best, and tried to the best of our ability to push the matter through, but failed for want of money. All we want is money. The ability and talent we have in this State; and I suppose if we should establish a College here it would not be second to any in the United States. I doubt not we could do as well here as similar organizations elsewhere, and perhaps better, as we have the whole Pacific coast to draw upon for students.

Dr. Bunnell—After the incorporation of the College a proposition was made to the Committee of the Board of Regents, or rather to the Chairman of that committee, who was Professor Gilman. I presented, as Chairman of a committee of our Board, the act of incorporation, with other papers, for their consideration. Professor Gilman, whom I met with Dr. Lundborg, treated us in a polite manner. He said he would present the papers to the other members of the committee, whose names I have forgotten. He said, also, that I should hear from him after some matters had been settled in relation to the Medical College, which he supposed would be done on the following Monday. I did not hear from him until the resolution offered by a member of the Board of Regents, which you have had read to you, appeared in the newspapers.

I would state here that we demanded of the Board of Re-

gents that they accept us as an integral part of the University of California. It had been talked of from time to time whether they would accept us as an integral part of the University, or whether they would accept us upon the same terms as the Pharmaceutical Society was accepted. This resolution, as I view it, expressed a willingness to accept us upon the same terms that the California Pharmaceutical Society was accepted. And more than that: I recommended to the committee to confer with the Board of Regents and see if they would grant us certain privileges—if they would give us rooms, etc., in the Medical College; but the other members of the committee did not think it advisable to do so, as they would not accept the elephant—that we evidently were, in *their* estimation, as an integral part of the University, furnishing the necessary funds to conduct the same. I thought probably we could raise a sufficient fund by contributing to start the College. The rest of the committee, however, differed with me, and the conclusion was, if they would not accept us upon the terms that we desired, we would not be accepted at all, or would wait and present the matter to the Society at its next meeting. I have no doubt myself that such an arrangement could have been made. Whether it is advisable, whether it was advisable to make such an arrangement, it is for you, gentlemen, to determine. I think, Dr. Lundborg, I am correct in my statement in regard to the matter.

Dr. Lundborg—Yes, I think so.

Dr. Bunnell—They did not give us fully the cold shoulder. We had talked this matter over from time to time, of affiliation in the same manner that the Pharmaceutical Society had affiliated; but we would have got, as I believed, advantages that they did not get, because they have their own rooms, their own paraphernalia, and everything that is requisite for them. I believe we could have gone into the Medical College and had the use of rooms for professors and pupils. We could have had the use of such paraphernalia in chemistry and other matters as would be necessary, and everything requi-

site to our purpose; and it certainly seemed to me advisable if we were anxious to establish a Dental College, to push the matter and carry it in that way, or put it in such shape that it could have been properly presented to the Association. It however has not been done; the matter remains in *statu quo*. Whether it could be now accomplished or not I am unable to say.

Dr. Dutch—Did you get that assurance from them, or is this merely a surmise of yours?

Dr. Bunnell—Well, it is merely a surmise. I have talked with some of the Regents, and I have no question about it.

Dr. C. C. Knowles—We were assured by the Regents that we could not only have the rooms and the paraphernalia in the Medical College, but that they would give us any advantage they possibly could. I had it from a reliable source that they offered to fill four of our chairs that were necessary to be filled in the medical department.

Dr. Dutch—I will state to Dr. Knowles that I went further in the investigation, and found that we would have had a great deal of trouble to get into the Medical College. We had a meeting with some of the professors of the Medical College, and they were decidedly opposed to it.

Dr. Bunnell—I believe it could have been carried through in the way I have mentioned, and that we could have got advantages that would have been of importance to us. But it was hardly to be expected that without pecuniary aid from us an institution like the University would assume the whole financial responsibility. I think they would have given us aid that would have enabled us to have a beginning in the establishment of a Dental College. I also recommended to the members of the Board that in the event they failed in their efforts to get the Regents to accede to our proposition, we could make some effort with the other Medical Society, and see what we could do there; but it has been thought

best, probably wisely, that the matter should be held in abeyance until the meeting of the State Dental Association.

Dr. C. C. Knowles—There appears to me to have been a misunderstanding and a muddle from beginning to end in this matter. That is just exactly the way I understand the matter. Now I cannot, for the life of me, see how, under the terms of the application as presented and read before you, the Board of Regents could return any other answer than they have returned.

Dr. Bunnell—I wish to state one thing further, so as to be fairly understood. We demanded of the Regents that the Dental College should be considered, or become an integral part of the University. That does not appear in the paper that Dr. Lundborg read.

Dr. C. C. Knowles—Well, upon what ground that demand was made, for the life of me I cannot see. I see no analogy anywhere in the world that would justify it. Here we come, an individual under a charter, a legal body from the outside, maintaining under the terms proposed our legal rights under our legal charter, to elect our own officers, to fill our own chairs, to dictate the curriculum, course of study, and everything in these details was to be conducted as under our charter privileges; and then go and demand—what? Not an affiliation, but to become part and parcel of the University.

Dr. Dutch—Was it a demand or request, I would ask of Dr. Bunnell?

Dr. C. C. Knowles—Well, it don't make any particular difference which it was.

Dr. Dutch—I think it does make a material difference whether you demand or request.

Dr. C. C. Knowles—Well, I cannot see how it could be done, no matter what term you make use of here. It is impossible under the terms of those propositions to be connect-

ed with that University, except by affiliation. We cannot become an integral part of the University and at the same time maintain an independency; we cannot do it. The law disallows of it altogether. If we become an integral portion of the University, we must be subject in detail as well as in general to the government of that institution.

After further discussion, participated in by Drs. C. C. Knowles, Lundborg, Bunnell, Dutch, Prather, Crossett, Winter, Birge, Dennis and Plomteaux, on inquiry of Dr. C. C. Knowles it was discovered that the College had ceased to exist on account of non-compliance of the State laws controlling corporate bodies, therefore the whole matter was indefinitely postponed.

Dr. McCowen reported a case of "galvanic action" in filling, with the clamp adjusted to the teeth, when using gold, letting it come in contact with the clamp.

Dr. Dennis, on behalf of the San Francisco Dental Association, invited the members of the California State Dental Association to partake of a collation at Martin's restaurant at 7:30 o'clock P. M. Invitation accepted.

On motion an order was drawn on the Treasurer for $237 50, in favor of the Publication Committee, for payment of balance due on Transactions account.

It was agreed that the next annual session be held in San Francisco, commencing the second Tuesday in June, 1875.

The Secretary was allowed $125 00, and an order drawn on the Treasurer for the amount.

On motion the Secretary was instructed to furnish each member of the Association, by mail or otherwise, with a copy of the Transactions as soon as published.

Agreed that the hour of adjournment of this Annual Session be fixed at 5:30 o'clock P. M.

Ordered, that the President and Secretary be authorized to draw warrants on the Treasurer for the payment of all legitimate bills presented after adjournment.

Dr. C. C. Knowles moved that a committee of five be designated by the Chair to inquire into measures looking towards the establishment of a Dental College, and report at the next annual meeting.

Carried—and Drs. C. C. Knowles, Dutch, Younger, Knox and Dennis, appointed said committee.

The President was granted thirty days time to appoint essayists.

The President announced the following Standing Committees for the ensuing year:

On Dental Pathology and Surgery—Drs. Dennis, Goe and Eaton.

On Dental Therapeutics—Drs. Hubbard, Crossett and Ralls.

On Dental Chemistry—Drs. Roberts, Lundborg and Hoadley.

On Operative Dentistry—Drs. S. E. Knowles, Warner and Menefee.

On Mechanical Dentistry—Drs. McAllister, Cogswell and Prather.

On Dental Histology and Microscopy—Drs. Winter, Cutlar and Yates.

On Dental Literature and Education—Drs. Dutch, Younger and Light.

On Publication—Drs. Pierson, Plomteaux (*ex officio*) and Knox.

Executive—Drs. Pierson, Plomteaux (*ex officio*), C. C. Knowles, Cutlar and Bunnell.

Josiah Bacon, of Boston, Treasurer of the Goodyear Dental Vulcanite Company, very kindly donated *five dollars* to the Association.

RECEIPTS OF THE SESSION.

Admission fees	$ 40 00
Annual dues	225 00
Assessment	160 00
Folkers Bros., donation	50 00
Josiah Bacon, donation	5 00
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Adjourned to meet in San Francisco Tuesday, June 8, 1875, at 10 o'clock A. M.

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JAMES B. HODGKIN, D.D.S., Professor of Dental Mechanism and Metallurgy.
WILLIAM FARMER, M.D., D.D.S., Demonstrator of Operative Dentistry.
B. M. WILKERSON, M.D., D.D.S., Demonstrator of Mechanical Dentistry.
THOMAS S. LATIMER, M.D., Demonstrator of Anatomy.

The thirty-fifth Annual Session will commence on the 15th of October, 1874, and continue until March, 1875.

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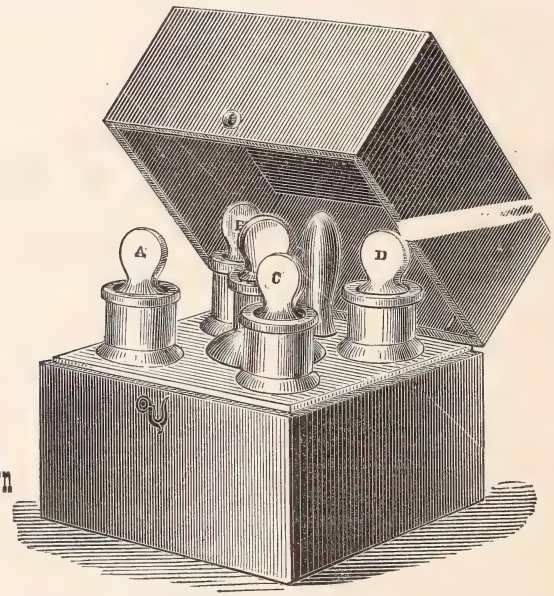

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AT THE

Sixth, Seventh, Eighth, Ninth and Tenth

ANNUAL SESSIONS,

HELD AT SAN FRANCISCO,

—IN—

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DISCLAIMER.

The California State Dental Association, although formally accepting and publishing the reports of the various Standing Committees, and the Essays read before the Association, holds itself wholly irresponsible for the opinions, theories, or criticisms therein contained, except when otherwise decided by special resolution.

TRANSACTIONS

OF THE

CALIFORNIA STATE DENTAL ASSOCIATION,

AT THE

SIXTH ANNUAL SESSION,

HELD AT SAN FRANCISCO,

Commencing June 8th, 1875.

OFFICERS—1875.

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Vice-President,

WM. B. KINGSBURY.

Recording Secretary,

L. G. YATES.

Corresponding Secretary,

ALEX. WARNER, JR.

Treasurer,

J. J. BIRGE.

Librarian,

WM. DUTCH.

NOTE.—Owing to the loss of all papers, and imperfect manner in which the Minutes for the Session of 1875 were kept and recorded, the Publication Committee decided to publish only the list of officers, to indicate that meetings were held.

TRANSACTIONS

OF THE

CALIFORNIA STATE DENTAL ASSOCIATION,

AT THE

SEVENTH ANNUAL SESSION,

HELD AT SAN FRANCISCO,

Commencing June 13th, 1876.

OFFICERS—1876.

President,

WM. DUTCH.

Vice-President,

WM. B. KINGSBURY.

Recording Secretary,

L. L. DUNBAR.

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MINUTES OF TRANSACTIONS

OF THE

California State Dental Association

SESSION OF 1876.

San Francisco, June 13th, 1876.

FIRST DAY—MORNING SESSION.

Pursuant to adjournment, the Association convened, and was called to order at 11 o'clock, A. M., by the President, H. J. Plomteaux.

Roll of officers called by the Corresponding Secretary. All present except the Recording Secretary, L. G. Yates, whose place was filled by the Corresponding Secretary, Alex. Warner, Jr., assisted by L. L. Dunbar.

On motion of Dr. Dutch, the President appointed a committee, consisting of Drs. Dutch, Bunnell, and Birge, to recommend hours for holding meetings. The committee reported that the meetings be held from 10 A. M., to 12 M., from 2 to 5 and from 8 to 10 P. M. The report was adopted.

Drs. Joseph Misch, of Red Bluff, and J. S. Crawford, of Los Angeles, applied for membership. Applications were referred to Executive Committee.

On motion, the President was requested to read the Annual Address at 2 P. M.

Adjourned.

FIRST DAY—AFTERNOON SESSION.

The Association met at 2 o'clock; President Plomteaux presiding.

The minutes of the morning session were read and approved.

The President read the Annual Address, which was received and placed on file.

The Executive Committee reported favorably on the application of Dr. J. S. Crawford, and the candidate was elected to membership.

The Executive Committee were instructed to employ a short-hand reporter for the session.

Adjourned.

FIRST DAY—EVENING SESSION.

The Society convened at 8 o'clock, and was called to order by President Plomteaux.

The minutes of afternoon session were read and approved.

Dr. S. E. Goe read an individual report from the Committee on Operative Dentistry, which was discussed by Drs. Lane, Sichel, Birge, Goddard, Bunnell, Crossette, Plomteaux and Dunbar.

On motion, a committee, consisting of Drs. Lane, Goddard

and Ralls was appointed to draft resolutions relative to the death of Drs. F. H. Hubbard, J. N. Meyers and F. B. Rosliwin.

Dr. L. L. Dunbar, of the Committee on Dental Pathology and Surgery, read an individual report.

Adjourned.

SECOND DAY—MORNING SESSION.

The Association met and was called to order at 10 A. M.; Dr. Plomteaux presiding.

Minutes of previous meeting were read and approved.

Dr. C. S. Lane read an essay on Mechanical Dentistry.

Dr. W. C. Harding, of Suisun, applied for membership; which was referred to Executive Committee.

Dr. Birge, Treasurer, made his annual report; which was referred to the Executive Committee, with the request that they report upon same at their earliest convenience.

An essay entitled "The Mental and Physical Requisites of Dental Students" was read by Dr. Goddard.

Charges were preferred against Drs. C. M. Richmond and S. W. Dennis for violation of the Code of Dental Ethics, by Drs. Warner, Richmond, and Bush.

Referred to a committee, consisting of Drs. Goddard, Goe, S. E. Knowles, Dunbar, and Ralls.

Dr. S. E. Knowles introduced a resolution proposing an amendment to the By-Laws relative to the impeachment of members, which, under the rules, was laid over until the afternoon session.

Adjourned.

SECOND DAY—AFTERNOON SESSION.

The Association was called to order at 2 o'clock by the President, Dr. Plomteaux.

Minutes of morning session were read and approved.

Drs. Joseph Misch and W. C. Harding were regularly admitted to membership.

The committee on charges against Drs. Richmond and Dennis made the following report:

"*California State Dental Association:*

"GENTLEMEN—Your committee appointed to consider the articles of impeachment preferred against S. W. Dennis, M.D., and C. M. Richmond, D.D.S., hereby refer same back to your Honorable Body, for the following reasons:

"1st. In one communication charges are preferred against two members.

"2d. One of the members so charged has signed said charge.

"In our opinion such method of proceedure is in bad taste, irregular, and without precedent.

"C. L. GODDARD, D.D.S.,
"S. E. GOE, D.D.S.,
"L. L. DUNBAR, D.D.S.,
"S. E. KNOWLES, M.D., D.D.S.,
"R. F. RALLS, D.D.S., } *Committee.*"

Report adopted and committee discharged.

Dr. Dutch presented the following resolution:

Officers and Members of the California State Dental Association:

We hereby charge C. M. Richmond, D. D. S., a member of this Association, with having violated the provisions of the

Code of Dental Ethics adopted by this Society, and respectfully request that a committee be appointed to investigate said charges. Signed.

WM. B. KINGSBURY,
S. E. KNOWLES,
WM. DUTCH.

The matter contained in the above resolution was referred to a committee consisting of Drs. Goddard, Goe, Warner, Ralls and Dunbar.

Dr. S. E. Knowles' proposed amendment to the By-Laws was made the special order of business for Friday at 2 P. M.

REPORT OF THE OBITUARY COMMITTEE.

San Francisco, June 14th, 1876.

California State Dental Association:

WHEREAS, During the past year death has invaded our ranks, and snatched from their respective fields of usefulness, their families and friends, Drs. J. N. Meyers, of Stockton, F. H. Hubbard, of San Francisco, and F. B. Rosliwin, of Napa, and

WHEREAS, We deeply regret their loss in the prime of life, and in the midst of a career of promise, yet would we bow with submission, and ourselves learn to act well and nobly our part in the great drama of life, that we, too, may make our loss felt when we go hence; therefore, be it

Resolved, That we as a body convened do hereby tender to the families in their great grief an expression of our sincere sympathies and kindly greeting; and, furthermore, be it

Resolved, That the above preamble and resolutions be spread in full upon the minutes of our Association; also, that the Secretary be instructed to forward a copy to the several bereaved families of our deceased members.

Signed.

C. S. LANE.
C. L. GODDARD, D. D. S.
R. F. RALLS, D. D. S.

Adjourned.

SECOND DAY—EVENING SESSION.

The Society was called to order at 8 o'clock ; Dr. Plomteaux presiding.

Minutes of afternoon session were read and approved.

A communication signed by Drs. Richmond, Warner and Goddard charging S. W. Dennis, M. D., with having violated the Code of Ethics adopted by the Association, which was referred to a committee consisting of Drs. S. E. Knowles, Thompson, Lane, Goe and Ralls.

Dr. Warner read an essay entitled "The Prevention and Treatment of Approximate Decay of the Teeth."

The committee appointed to investigate the charges against Dr. Richmond reported that they found him guilty as charged, and commended him to the leniency of the Association.

The report was adopted.

Dr. Richmond was, by vote of the Association, suspended from membership for one year.

Adjourned.

THIRD DAY—MORNING SESSION.

The Association convened at 10 A. M., Dr. Plomteaux presiding.

The minutes of previous meeting were read and approved.

A communication was received from Dr. Younger, asking the Society to refund him $50, loaned the Publication Committee, after deducting the amount of his dues. Referred to the Executive Committee.

On motion, the election of officers for the ensuing year was made the special order for 8 o'clock P. M. Thursday.

It was announced that Dr. Goe would clinic at 12.30 P. M. at the office of Dr. Dutch.

Adjourned.

THIRD DAY—AFTERNOON SESSION.

Association met at 2 o'clock, and was called to order by Dr. Plomteaux.

The minutes of previous meeting were read and approved.

Drs. F. A. Odermatt and I. S. Halsey applied for and were regularly admitted to membership.

The Executve Committee reported that they had examined the Report of the Treasurer and found it to be correct.

Dr. H. E. Knox read a paper on Riggs Disease from Dr. G. A. Mills, of Baltimore, a corresponding member of the Association.

On motion, a vote of thanks was tendered Dr. Mills.

The subject matter of Dr. Mills' paper was discussed by Drs. Bunnell, Warner, Harding, C. C. Knowles and Prather.

Adjourned.

THIRD DAY—EVENING SESSION.

The minutes of afternoon session were read and approved.

The Executive Committee made the following report, which was adopted:

"Having examined into the matter alluded to in Dr. Younger's letter, we would recommend that his request be complied

with, and that the amount claimed, less his dues, be refunded to him.

"Respectfully,

"WILLIAM DUTCH,
"HENRY E. KNOX,
"E. F. BUNNELL.

"June 15, 1876."

The committee appointed to inquire into the charges preferred against Dr. Dennis, made the following report, which was accepted, and the committee discharged:

California State Dental Association:

The committee appointed to examine into the charges of violation of the Code of Dental Ethics, preferred against Dr. Dennis, find, upon examination, that the article referred to as evidence was not an advertisement, and that the objectionable features were introduced without his knowledge or consent. We, therefore, find the charges not sustained.

S. E. KNOWLES,
SAMUEL E. GOE,
R. F. RALLS,
WM. F. THOMPSON,
C. S. LANE,
} *Committee.*

The election of officers being the special order of business, the Association proceeded accordingly, with the following result:

President—WILLIAM DUTCH, of San Francisco.
Vice-President—WILLIAM B. KINGSBURY, of Santa Clara.
Recording Secretary—L. L. DUNBAR, of San Francisco.
Corresponding Secretary—S. E. GOE, of San Francisco.
Treasurer—J. J. BIRGE, of San Francisco.
Librarian—H. E. KNOX, of San Francisco.

The newly elected officers were duly installed, and the Association adjourned.

S. E. GOE,
Secretary pro tem.

FOURTH DAY—MORNING SESSION.

The Association was called to order at 10 A. M. by the President, Wm. Dutch.

Minutes were read of previous meeting, and, with corrections, were approved.

On motion of Dr. Morton, an order in favor of Dr. Younger was ordered drawn on the Treasury for the amount of $30.

On motion of Dr. Kingsbury, Dr. Yates' bill for postage stamps, amounting to $4.29, was ordered paid.

On motion of Dr. C. C. Knowles, the Secretary was instructed to demand of Dr. Yates books or other property belonging to the Association, that may be in his hands; and, also, to inform him, that if he had any claim against the Association, for services or otherwise, it is the wish of the Society that he present said claim to the President and Secretary.

A letter was received from Dr. S. W. Dennis, resigning his membership. After considerable discussion upon the same, Dr. G. A. Case offered the following:

"*Resolved*, That it is the sense of this Association that Dr. Dennis withdraw his resignation."

Which was adopted, with but one dissenting voice.

Dr. Dennis then withdrew his resignation.

Adjourned.

FOURTH DAY—AFTERNOON SESSION.

The Society met at 2 o'clock, President Dutch in the chair.

The minutes of previous meeting were read and approved.

A bill of $24 was received from the Y. M. C. A., for rent of

their hall; and, on motion of Dr. Plomteaux, the same was referred to the Executive Committee.

On motion of Dr. Kingsbury, an order in favor of Dr. Plomteaux for $20, for current expenses, was ordered drawn upon the Treasury.

The following resolution was presented by Dr. Plomteaux, which was adopted:

"*Resolved*, That a committee of (5) five be appointed by the chair, to report at our next Annual Session, what they may deem expedient relative to State legislation for regulating the practice of Dentistry."

Dr. Plomteaux moved that our Constitution, By-Laws and Code of Ethics, be referred to a committee of three (3) for revision, and that said committee report on the 1st day of the next Annual Session. Adopted.

Dr. Kingsbury moved that the Association hold its next Annual Session in San Francisco, commencing 1st Tuesday in June, 1877.

Pursuant to special order, Dr. S. E. Knowles read the following series of resolutions, and the same were adopted:

"*Resolved*, That a committee of five (5) on Dental Ethics be added to the Standing Committees.

"*Resolved*, That the following be inserted after Section 5, Article II, of the By-Laws:

"SECTION 6. It shall be the duty of the Committee on Ethics, which shall consist of five members, to receive and entertain communications from members in reference to violations of the Code of Dental Ethics, and to present articles of impeachment against such members as have, in their judgment, violated said laws."

On motion of Dr. C. C. Knowles, the Publication Committee were instructed not to publish the transactions of this session.

Resignation of membership was tendered by Dr. W. J.

Younger, and, on motion of Dr. C. C. Knowles, the same was accepted, and placed on file.

On motion of C. C. Knowles, the vote taken on the resignation of Dr. Younger was reconsidered, and the matter laid on the table, to be taken up during the evening session.

Inasmuch as there still existed some financial difficulty between the Association and Dr. Younger, the Executive Committee were instructed to amicably adjust the same.

Adjourned.

FOURTH DAY—EVENING SESSION.

The Society was called to order by President Dutch.

Minutes of afternoon session were read and, with corrections, were approved.

On motion of Dr. Prather, the bill for rent of hall was ordered paid.

The Executive Committee reported that they had arranged the matter between Dr. Younger and the Association, and that they were authorized to withdraw his resignation.

On motion of Dr. Plomteaux, a vote of thanks was tendered those who had given clinics during the session.

On motion of Dr. Goe, a vote of thanks was extended ex-President Plomteaux.

The receipts for the session were $235.00.

The minutes of present session were read and approved.

Adjourned until 1st Tuesday in June, 1877, at 10 o'clock, A. M.

L. L. DUNBAR,
Secretary.

TRANSACTIONS

OF THE

CALIFORNIA STATE DENTAL ASSOCIATION,

AT THE

EIGHTH ANNUAL SESSION,

HELD AT SAN FRANCISCO,

Commencing June 5th, 1877.

OFFICERS—1877.

President,

WM. DUTCH.

Vice-President,

WM. B. KINGSBURY.

Recording Secretary,

L. L. DUNBAR.

Corresponding Secretary,

S. E. GOE.

Treasurer,

J. J. BIRGE.

Librarian,

H. E. KNOX.

TRANSACTIONS

OF THE

California State Dental Association

EIGHTH ANNUAL SESSION.

SAN FRANCISCO, June 5th, 1877.

Pursuant to adjournment, the Association was called to order by the President, Wm. Dutch.

The Secretary called the roll of officers; all were present.

Applications for membership were received from Drs. A. A. Gaston, T. S. Whipple, of San Jose, and J. L. Asay, of Visalia.

It was arranged that the Association should hold its sessions between the following-named hours: from 10 to 12 A. M.; from 2 to 5 and 8 to 9 P. M.

The reading of the President's Annual Address was deferred until 2 o'clock P. M.

Adjourned.

FIRST DAY—AFTERNOON SESSION.

Called to order at 2 o'clock; President Dutch in the chair.

The minutes of morning session were read and approved.

Drs. T. S. Whipple, A. A. Gaston and J. L. Asay were regularly admitted to membership.

Dr. Dutch read the President's Annual Address, which was attentively listened to.

Dr. Geo. A. Case presented his resignation, which was accepted.

Dr. J. L. Cogswell presented his resignation, giving as a reason for such action that he had had a bill, for dues, presented twice which had once been paid.

After some discussion, Dr. Kingsbury was appointed a committee of one to confer with Dr. Cogswell, and explain that the error was by a former Secretary, who had failed to give him credit for dues paid.

Dr. H. E. Knox read a very interesting letter from Dr. Geo. A. Mills, of Baltimore, and, on motion of Dr. Plomteaux, a vote of thanks was tendered the writer.

Dr. Birge moved that a committee of five be appointed to report upon what they might deem proper relative to the establishment of a Dental College on the Pacific Coast. Carried.

The President was granted permission to defer the appointing of said committee until the evening session.

At the request of Dr. Kingsbury, Dr. Bunnell described his method of capping exposed Pulps, which elicited considerable discussion from Drs. Sichel, Bunnell, Birge, Menefee, Goddard and S. E. Knowles.

Adjourned.

FIRST DAY—EVENING SESSION.

Called to order at 8 o'clock; President Dutch presiding.

The minutes of afternoon session were read and approved.

D. F. Ogden, D.D.S., of Oakland, applied for membership. The application took the usual course.

Dr. Kingsbury reported having conferred with Dr. Cogswell, and that matters had been satisfactorily arranged between him (Dr. C.) and the Association; and, furthermore, that he was authorized to withdraw Dr. Cogswell's resignation.

Report accepted, and resignation withdrawn.

Dr. Goddard read an essay entitled "Sensitive Dentine."

Adjourned.

SECOND DAY—MORNING SESSION.

Called to order at 10:30 A. M., with President Dutch in the Chair.

The minutes of previous session were read and approved.

Applications for membership were received from Drs. W. H. Robinson, of San Francisco, and C. E. Davis, of St. Helena.

The Executive Committee reported favorably upon the above applications, and the gentlemen were regularly admitted to membership.

The subject of Sensitive Dentine was taken up and discussed by Drs. Dutch, Birge, Goddard, Wilbert, Lane and Robinson.

The President appointed Drs. Plomteaux, Birge, S. E. Knowles, Knox, and Menefee, to act as Special Committee on Dental College.

By request, Dr. Goddard reread a portion of his essay on "Sensitive Dentine," relating to the use of arsenical paste.

On motion of Dr. Plomteaux, the subject of Sensitive Dentine was passed.

Dr. Plomteaux presented the report of the Committee on Revision of the Constitution and By-Laws, which was made the special order for 3 o'clock P. M.

Adjourned.

SECOND DAY—AFTERNOON SESSION.

Convened at 2:30 o'clock. President Dutch in the Chair.

The minutes of previous meeting were read and approved.

Dr. C. E. Davis, was regularly admitted to membership.

Dr. S. E. Knowles read an interesting paper entitled "The Best Methods and Materials for the Treatment and Filling the Roots of Teeth."

The hour of special order having arrived, the report of the Committee on the Revision of the Constitution and By-Laws was read and adopted, and the Publication Committee was instructed to have one thousand copies of the revised Constitution and By-Laws printed, and to mail a copy to every dentist on the Pacific coast, as far as it might be possible to obtain addresses.

Dr. Knox read an individual report from the Committee on Operative Dentistry.

Dr. Robinson read an essay entitled "Pounded and Pressed Plugs."

Adjourned.

SECOND DAY—EVENING SESSION.

Called to order at 8 o'clock by President Dutch.

Minutes of afternoon session were read and approved.

The Special Committee on Dental College reported as follows:

"*Officers and Members of the*
California State Dental Association:

Your Committee on Dental College would most respectfully submit the following resolutions for your consideration:

Resolved, That the establishment of a Dental College on the Pacific coast is not only necessary, but expedient.

Resolved, That a committee of ten be appointed by the Chair, with full power to proceed with the organization of a Dental College in such manner as they may deem proper.

Resolved, That said Committee be instructed to meet, organize, and take preliminary action within three days after their appointment.

H. J. PLOMTEAUX,
S. E. KNOWLES,
H. E. KNOX,
J. J. MENEFEE,
} *Committee.*

Dr. Lane moved the adoption of the report, and the appointment of the Committee as recommended.

Dr. Warner moved to amend by laying the report on the table for one year, which was followed by a lengthy discussion. The amendment was lost.

Dr. Dutch vacated the Chair, and moved to so amend the resolution that the committee should be elected by ballot. The motion prevailed, and the report, as amended, was adopted.

Dr. Robinson moved that the election of the College Committee be made the special order for 10 o'clock A. M. Thursday. Carried; but the motion was reconsidered, and it was decided, by vote, that a special session be held immediately after the adjournment of Thursday evening's session, for said purpose.

Adjourned.

THIRD DAY—MORNING SESSION.

The Association convened at 10 A. M., and was called to order by President Dutch.

The minutes of previous session were read and approved.

Dr. J. Warner, of Oakland, applied for membership.

The Treasurer made the Annual Report, which was placed in the hands of the Executive Committee for examination.

Dr. Robinson read a voluntary essay, entitled "Spontaneous Pulp Irritation," which was discussed by Drs. S. E. Knowles and Robinson.

Dr. Lane read an essay on "Dental Ethics," which was followed by discussion upon Dental Ethics and Legislation, by Drs. Lane, Robinson, Birge and Plomteaux.

Adjourned.

THIRD DAY—AFTERNOON SESSION.

The Association met at 2¼ P. M. President Dutch in the Chair.

The minutes of morning session were read and approved.

Dr. J. Warner was regularly admitted to membership.

Dr. Odermatt, of the Committee on Mechanical Dentistry, made an individual report.

Dr. Menefee read a report from the Committee on Dental Literature and Education, in which he recommended the establishment of a quarterly journal, which should be devoted to dental science. Discussed by Drs. Robinson, Dennis and Hoadley.

The Committee on Dental Ethics reported and preferred

charges against J. L. Wilbert, J. P. Crowell, and J. L. Cogswell, for violation of the Code of Dental Ethics. On motion, a committee consisting of Drs. Light, Asay, Sichel, Goddard, and Menefee, was appointed to investigate said charges, and to report as soon as convenient.

Adjourned.

THIRD DAY—EVENING SESSION.

Called to order at 8 P. M.; Dr. Dutch presiding.

The minutes of afternoon session were read and approved.

The Executive Committee made the following report and the same was adopted:

"GENTLEMEN: We have examined the books and papers of the Treasurer and Secretary, and found them correct, with the following exceptions, viz: Drs. Cogswell and Stanley hold receipts signed by Dr. Yates, Secretary, for five dollars, with which they have not been credited, and which amounts do not appear in the cash accounts.

We recommend that Drs. Stanley and Cogswell be credited with the amounts for which they hold receipts.

The error evidently occurred from Dr. Yates sending the receipts previously signed and not entering the amounts in the cash book when collected.

We also find, in the cash accounts, ten dollars placed to the credit of Dr. Younger which should be credited to Dr. Wood.

We recommend that the Secretary make the necessary corrections.

Inasmuch as duties of the Secretary are arduous and require much of his time, we recommend that he be paid the sum of fifty dollars in compensation of his services to the close of the present session.

All of which is respectfully submitted.

H. J. PLOMTEAUX,
CLARK L. GODDARD, } *Committee.*"

The following Officers for the ensuing year were elected and and duly installed:

President—Wm. B. Kingsbury,
Vice-President—C. S. Lane,
Secretary—H. J. Plomteaux,
Corresponding Secretary—S. E. Goe,
Tresurer—J. J. Birge,
Librarian—H. E. Knox.

At 10 o'clock the Association went into special session to elect Dental College Committee previously provided for, with the following result:

S. W. Dennis, C. C. Knowles, W. F. Thompson, J. J. Menefee, Wm. Dutch, H. E. Knox, W. J. Younger, S. E. Knowles, E. F. Bunnell and H. J. Plomteaux.

Adjourned.

FOURTH DAY—MORNING SESSION.

The Association was called to order at 10 A. M., President Kingsbury in the chair.

Minutes of previous session were read and approved.

Bills to the amount of $36.00 were allowed and ordered paid.

A report was read from the Committee on Dental Ethics, and the same was made the special order for 3.30 P. M.

The subject of Filling the Roots of Teeth was taken up and discussed by Drs. Sichel, Lane, Menefee, Dutch, Plomteaux, Dennis, Knowles and Robinson.

Adjourned.

FOURTH DAY—AFTERNOON SESSION.

The Association convened at 2 o'clock and was called to order by President Kingsbury.

The minutes of morning session were read and approved.

Dr. J. Warner was admitted to membership.

On motion of Dr. Dennis, the name of Dr. J. J. Vincent of Amhurst, Mass., was dropped from the roll of corresponding members.

On motion of Dr. Dennis, the Secretary was instructed to inform Prof. B. F. Coy of Baltimore, Md., that he had been elected an Honorary Member of the Association, with the understanding that he would furnish a paper for the next session.

Pursuant to special order, the committee appointed to investigate the charges against Drs. Wilbert and Crowell, reported as follows:

"*California State Dental Association:*

"MR. PRESIDENT, AND GENTLEMEN:

"We, the Special Committee on Dental Ethics, beg to submit the following report:

"We have examined charges against Dr. J. L. Wilbert, and found him guilty of violating the Code of Dental Ethics, Article II, Section 3, in placing upon his sign or advertisement, 'Laughing Gas Administered,' and of refusing to remove the same.

"In the cases of Drs. J. L. Cogswell and J. P. Crowell, we find them guilty of contempt, in not coming before the committee at the time appointed.

"We have examined the charges against these gentlemen

and the testimony presented, and find them guilty of violating the Code of Ethics, Article II, Section 3, in advertising specialties, contrary to said article.

"Respectfully,

"J. J. Menefee,
"J. L. Asay,
"Max Sichel,
"W. W. Light,
"C. L. Goddard."

On motion of Dr. Warner, the charges against Dr. Wilbert were dismissed.

Dr. Dennis moved that the charges against Dr. Crowell be dismissed. Lost.

On motion, the charges against Dr. Crowell were sustained, and he was suspended for the term of one year.

On motion, the charges against Dr. J. L. Cogswell were sustained, and he also was suspended for one year.

Adjourned.

FOURTH DAY—EVENING SESSION.

Called to order at 8 o'clock, Dr. Kingsbury presiding.

The minutes of afternoon session were read and approved.

A bill of twenty-four dollars for hall rent was allowed, and an order drawn for the amount.

The Association voted to hold the next Annual Session in San Francisco, Tuesday, June 4th, 1878.

Dr. Robinson read an essay, entitled Theory and Facts.

The Treasurer was authorized to pay all just bills against

the Association which may be incurred during the year, provided they shall have been approved by the President and Secretary.

The receipts for the session were $275.

Dr. Dutch moved that the Publication Committee be instructed to not publish the proceedings of this session. Carried.

The minutes were read and approved, and the Association adjourned to meet in San Francisco, June 4th, 1878, at 10 o'clock A. M.

H. J. PLOMTEAUX,
Secretary.

TRANSACTIONS

OF THE

CALIFORNIA STATE DENTAL ASSOCIATION,

AT THE

NINTH ANNUAL SESSION,

HELD AT SAN FRANCISCO,

Commencing June 4th, 1878.

OFFICERS—1877-8.

President,

WM. B. KINGSBURY.

Vice-President,

C. S. LANE.

Recording Secretary,

H. J. PLOMTEAUX.

Corresponding Secretary,

S. E. GOE.

Treasurer,

J. J. BIRGE.

Librarian,

H. E. KNOX.

TRANSACTIONS

OF THE

California State Dental Association

NINTH ANNUAL SESSION.

San Francisco, June 4th, 1878.

FIRST DAY—MORNING SESSION.

The Association convened at 10 o'clock A. M., and was called to order by the President, Wm. B. Kingsbury.

The roll of officers was called and all responded, excepting Corresponding Secretary S. E. Goe.

Applications for membership were received from John Rabe, D.D.S., of Oakland; F. A. Brewer, D.D.S., of Santa Barbara, and W. Z. King, of Chico, which were referred to the Executive Committee.

Dr. Knox presented the following resolution, and the same was adopted:

Resolved, That the sessions of this Association be held daily from 10 A. M. to 12 M.; from 2.30 to 5 P. M. and from 8 to 10 P. M.

On motion, the reading of the President's Annual Address was made the special order for 2.45 P. M.

Adjourned.

FIRST DAY—AFTERNOON SESSION.

The Association met at 2.30 P. M.; President Kingsbury in the chair.

The minutes of the morning session were read and approved.

L. B. Holmes, D.D.S., of Woodland, and A. F. McLain, D.D.S., M.D., of San Rafael, applied for membership.

The regularly-appointed Executive Committee being absent, Drs. Dutch, Knox and S. E. Knowles were appointed to fill the vacancies.

President Kinsbury read the Annual Address.

Dr. Lane read an essay entitled "The Best Methods and Materials for Filling Children's Teeth."

Dr. Robinson read a volunteer essay entitled "Treatment of Six-Year Molar Teeth."

The President introduced Dr. J. S. Hurlburt, of Springfield, Mass., who made some appropriate remarks.

It was announced that Dr. S. E. Knowles would clinic in the Association rooms at 1 P. M.

Adjourned.

FIRST DAY—EVENING SESSION.

Called to order at 8 P. M.; President Kingsbury in the chair.

The minutes of afternoon session were read and approved.

Drs. Rabe, Holmes, McLain, King and Brewer were regularly admitted to membership.

Dr. Goddard read a report on Operative Dentistry.

Dr. S. E. Knowles read a volunteer essay entitled "The Transformation of Pulp into Dentine."

Adjourned.

SECOND DAY—MORNING SESSION.

Called to order at 10 A. M.; President Kingsbury in the chair.

The minutes of previous session were read and approved.

Dr. J. P. Crowell tendered his resignation which was accepted.

Dr. C. L. Goddard read a somewhat humorous essay entitled "The Future Status of Dentistry."

Dr. McLain read a volunteer paper on "Therapeutical Treatment of the Dental Pulp."

Adjourned.

SECOND DAY—AFTERNOON SESSION.

Called to order at 2 P. M.; Dr. Kingsbury presiding.

The minutes of the morning session were read and approved.

The financial books of the Treasurer and Secretary were referred to the Executive Committee.

Drs. Lane, S. E. Knowles and Birge were appointed to draft and report resolutions relative to the death of Dr. J. J. Menefee.

Dr. Brewer read a volunteer essay on Exposed Pulps.

On motion, Prof. J. H. Wythe was requested to deliver a

lecture before the Association on Wednesday evening, at 8 P. M.

Adjourned.

SECOND DAY—EVENING SESSION.

Called to order at 8 P. M., by President Kingsbury.

The minutes of the afternoon session were read and approved.

J. H. Wythe, A.M., M.D., Professor of Microscopy and Histology in the Medical College of the Pacific, was introduced, and delivered a scientific lecture, entitled "Vitality Illustrated by Histology."

An unanimous vote of thanks was extended Prof. Wythe, and he was, on motion of Dr. Dennis, made an Honorary Member of the Association.

Dr. I. Sanger applied for membership.

Dr. Goe read an essay entitled, "The Diseases of the Gums and Alveolar Processes, and their Treatment."

Elections of officers for the ensuing year was made the special order for Thursday, at 8.15 P. M.

Adjourned.

THIRD DAY—MORNING SESSION.

Called to order at 10 A. M., President Kingsbury in the chair.

The minutes of the previous meeting were read and approved.

B. L. Rhein, D.D.S., of San Francisco, applied for membership.

Dr. Robinson read an essay on "Dentistry and Dentists on our Coast."

An essay written by Dr. Asay, entitled "The Use of the Microscope," was read by the Secretary.

A case in practice was introduced by Dr. Halsey, in which was detailed the successful replanting of an incisor tooth.

The President announced that Dr. Rabe would clinic in the Association rooms at 1 P. M.

Adjourned.

THIRD DAY—AFTERNOON SESSION.

Called to order at 3 P. M., President Kingsbury in the chair.

The minutes of the morning session were read and approved.

Drs. Sanger and Rhein were regularly admitted to membership.

The Obituary Committee made the following report:

"Dr. J. J. Menefee was born in the State of Indiana. He practiced dentistry twenty-two years, and has lived and practiced in San Jose for the last fourteen years. He died October 27th, 1877, deeply regreted and much beloved, as a genial gentleman, skillful practitioner, a kind husband and loving father. He was an useful member of the California State Dental Association, wherein he labored and held official position, more or less, ever since its formation.

"WHEREAS, It has pleased Almighty God in His Infinite Wisdom to remove from our midst, suddenly and in the prime of life, Dr. J. J. Menefee, of San Jose.

"*Resolved*, That we, as members of the California State Dental Association assembled, deeply deplore and lament his death, and regret the loss, from amongst us, of a gentleman and friend, as well as a most useful and estimable member of our Society.

"We would herewith tender to his bereaved and sorrow-stricken family our heartfelt sympathy.

"*Resolved further*, That these resolutions be spread upon the records of our Society, and that a copy be furnished by our Secretary to Mrs. J. J. Menefee, the widow of the deceased.

"San Francisco, June 6th, 1878.

"C. S. LANE,
"S. E. KNOWLES,
"J. J. BIRGE,
} *Committee.*"

The Executive Committee made the following report, which was adopted:

SAN FRANCISCO, June 6th, 1878.

California State Dental Association:

We have examined the accounts of the Treasurer and Secretary and found them correct.

The following bills we recommend to be paid: $28.00 to the Secretary for incidentals; $7.50 for Cushing's Law and Practice; $3.75 for printing Applications for Membership.

A claim has been presented by Dr. Yates for expenses incurred while he was Secretary of the Association, We would recommend that the amount be allowed him for dues.

We also recommend that the amount of $20.00 be paid President Kingsbury for expenses incurred, and $50.00 to the Secretary for services rendered.

Very respectfully,

CLARK L. GODDARD,
E. F. BUNNELL,
H. R. MORTON,
} *Executive Committee.*

Dr. Brewer read a paper entitled "The Want of Discrimination on the Part of Dentists"

Dr. Robinson read a paper on "Dental Criticism."

Adjourned.

THIRD DAY—EVENING SESSION.

Association met at 8.15; President Kingsbury in the chair.

The minutes of the afternoon session were read and approved.

The election of officers being the special order of business, the Association proceeded to ballot, which resulted as follows:

President—S. W. Dennis.
Vice President—J. S. Crawford.
Secretary—S. E. Goe.
Corresponding Secretary—H. E. Knox.
Treasurer—J. J. Birge.
Librarian—Wm. Dutch.

The officers elect assumed their respective stations.

It was decided by vote that the Association hold its next Annual Session in San Francisco, May 13, and to continue four days.

The President announced that Dr. Robinson would clinic Friday, at 8 A. M., in the rooms of the Association.

Adjourned.

FOURTH DAY—MORNING SESSION.

Called to order at 10 A. M.; President Dennis in the chair.

The minutes of the previous session were read and approved.

Dr. Plomteaux moved that the names of all members who are two or more years in arrears for dues be dropped from the roll after the close of the present session. Carried.

Dr. Plomteaux moved that a committee of five be appointed by the Chair, with instructions to present at the next Annual Session a bill to regulate by legislation the practice of Dentistry in California.

On motion, the President was made chairman of said committee.

An interesting letter was read from Dr. G. A. Mills, of Brooklyn, N. Y.

On motion of Dr. McLain, the same was received and placed on file, and a vote of thanks tendered the author,

Adjourned.

FOURTH DAY—AFTERNOON SESSION.

Convened at 2 P. M.; Dr. Dennis presiding.

The minutes of the morning session were read and approved.

On motion of Dr. Dutch, the President and Secretary were empowered to audit and order paid all just bills that might be presented after the Association adjourned.

Dr. Kingsbury moved that the President be authorized to fill the vacancies in the College Committee, and that said Committee be continued, with full power to proceed and perfect the organization of a Dental College. Carried.

A paper was read by Dr. Harding entitled "Outlines of Dental Chemistry."

Dr. Lane moved that the Publication Committee be instructed to have the transactions for this year with a synopsis of the past unpublished matter published. Carried.

Dr. Robinson introduced the following resolution, which was adopted:

"*Resolved*, That the matter of publishing our minutes in the form of a Quarterly Journal, adding thereto a few pages of original matter, and making said Journal a means of communication between members of the profession and the official organ of our Association, be referred to the Publication Committee.

The Receipts for the year were $300.00.

On motion of Dr. Dutch, the minutes were read and approved, and the Association to meet on the 2d Tuesday in May, 1879, at 10 A. M.

The President appointed the following Standing Committees and Essayists for the next session:

STANDING COMMITTEES.

Dental Pathology and Surgery—S. E. Goe, W. F. Griswold and John Rabe.

Dental Therapeutics—L. L. Dunbar, A. Cornwall and F. A. Brewer.

Dental Chemistry—J. L. Asay, Max Sichel and W. W. Light.

Dental Histology and Microscopy—S. E. Knowles, H. H. Pierson and W. F. Bishop.

Operative Dentistry—Wm. Dutch, W. B. Kingsbury and H. J. Plomteaux.

Mechanical Dentistry—Geo. McCowan, C. H. Fuller and F. A. Odermatt.

Dental Literature and Education—A. F. McLain, I. S. Halsey and W. C. Harding.

Dental Ethics—W. H. Robinson, Geo. McCowan, R. F. Ralls, W. J. Prather and C. L. Goddard.

Publication—S. W. Dennis, S. E. Goe (ex-officio), and J. J. Birge.

Executive—S. W. Dennis (ex-efficio), C. S. Lane, S. E. Goe (ex-officio), W. B. Kingsbury and Max Sichel.

Legislative—S. W. Dennis, J. S. Crawford, J. L. Asay, W.W. Light and S. E. Knowles.

Dental College—Dennis, Younger, Plomteaux, Dutch, Knox, Knowles, Kingsbury, Sichel, Bunnell and Pierson.

THESES.

Reflex Influence of Dental Associations and Dental Colleges on the Dental Profession—W. H. Robinson.

Legislation Pertaining to Dentistry—H. J. Plomteaux.

Conservative Dentistry—R. Cutlar.

Periostitis—Cyrus Hamilton.

Pulpitis and its Treatment—J. A. W. Lundborg.

Dental Legislation—C. E. Davis.

Professional Self-reliance—Jno. Rabe.

Professional Ethics—J. J. Birge.

The Wages of Professional Intercourse—Wm. B. Kingsbury.

Mechanical Dentistry Defined—W. C. Harding.

Oral Electricity—J. L. Cogswell.

Professional Culture—G. L. Jenkins.

Ulitis—C. S. Lane.

S. E. GOE,
Secretary.

ADDRESSES,

REPORTS OF COMMITTEES,

ESSAYS AND DISCUSSIONS.

1878.

PRESIDENT'S ANNUAL ADDRESS.

BY WM. B. KINGSBURY.

GENTLEMEN: — It is with great pleasure that I welcome you to the Ninth Annual Session of the California State Dental Association. I congratulate you on the goodly number present, and on the improved surroundings. We have abundant reason to congratulate ourselves and the Executive Committee on the liberality of the proprietor of this hotel, Mr. Leland, who has generously placed at our disposal, without compensation, these commodious rooms in which we are now assembled. We may justly, I think, congratulate ourselves on the progress we have made, on the benefits each member has derived by being connected with this Association, also in the fact that of the twenty-three persons who signed the constitution on the first day of the convention which met on the 29th day of June, 1870, sixteen are yet in the ranks, and most of them with us to-day. Seven have left us, two of whom have been called from labor and toil here on earth to an eternal refreshment, where there will probably be no dental services required. While we exchange fraternal greetings and congratulations, we seek in vain for the familiar face, and the friendly clasp of the hand, of our first Vice-President, Dr. J. J. Menefee, of San Jose. All remember; all held friendly, many fraternal relations with him. In his death, this Association has lost a zealous, useful and consistent member, while many of us have lost a brother.

Gentlemen, I do not propose to occupy your time in the discussion of subjects of a professional nature; but will leave that to be done by the several committees, and also those gentlemen to whom have been assigned special subjects for theses, who will, I doubt not, furnish topics for profitable and interesting discussions. There are, however, a few subjects to which I desire to call your especial attention. First, to the

Code of Dental Ethics which has been recommended by the American Dental Association, and has been adopted by this.

Article two, Section three, of this Code reads thus :

"It is unprofessional to resort to public advertisements, cards, handbills, posters or signs calling attention to peculiar styles of work, lowness of prices, special modes of operating, or to claim superiority over neighboring practitioners; or to publish reports of cases, or certificates, in the public prints; to go from house to house to solicit or perform operations; to circulate or recommend nostrums; or to perform other similar acts."

Gentlemen, however much I may differ with the reasoning and conclusions of the man who severs his connection with this Association for the purpose of doing or performing those acts which the article just read declares to be unprofessional, I am compelled to admire his sense of propriety; while he who seeks to retain a place in this Association, for the respectability it may give him, and at the same time violating its provisions adopted for the purpose of elevating its members, for this person I have little respect.

Section one, Article three, of the amended Constitution of the American Dental Association reads as follows :

"Each local society may send one for every five of its active members, and each Dental College one for its faculty, as delegates to this Association for one year, upon complying with the requirements of its Constitution; but no society shall be entitled to representation that does not adopt, or substantially recognize, its Code of Ethics."

Having complied with these requirements, this Association is entitled to and sends its delegates to that body. I am not prepared to say just what amount of benefit we derive by so doing, but believe the benefit is largely in excess of the expenditure. I think each member of this Association, who has represented it in the American Dental Association, will sustain this view of the case, and strongly protest against any action on our part whereby we may be deprived of this privilege. Since our organization, we have rejected no person who sought to become associated with us; so in the future, while I would open our doors wide to every man who is desirous of being benefited himself, or of adding to the usefulness of the Association, I am strongly of the opinion that we should receive no person into this body until he has first pledged him-

self to abide by the letter and spirit of the Code of Dental Ethics.

It may be proper that I should make a record on the important subject of a Dental College. There has been a time since we had an existence as a State Dental Association, when, had there been a Dental College in this State in working order, I would have made many and great sacrifices to have matriculated, and, if possible, obtained its degree; by this you are not to suppose, or presume, that my estimate of Dental Colleges, or the advantages which should be derived by a course of study at them, is lessened. I have never been more alive to the importance of dental education than at this time. I truly hope the time is near at hand when an institution of this kind will be in full operation in this State, with a corps of teachers fully prepared to instruct in all things pertaining to our profession, and all working in harmony with each other. I earnestly hope the special committee, who were elected at our last Annual Session for the purpose of giving this matter their early and careful attention, will, at this session, be prepared to report some plan by which this much-desired, but long-delayed, object may be attained. At the same time, I think too much may be sacrificed for even so desirable an institution as a Dental College.

I have often speculated on the importance of our annual gathering, and queried whether our members were as much alive to the advantages which we may and ought to derive from them as we should be. It is true that these sessions have not always been what they should, or what we might reasonably have expected them to be. Dissensions and contentions, I regret to say, have sometimes found their way into our sessions; and into what society do they not sometimes come? The last medical society which met a few months since in San Jose, furnished an instance of this kind. A comparatively unimportant question came up for consideration; half or three-fourths of an hour was consumed; the question was one of little professional interest, but the discussion waxed warm; at length a venerable M. D. obtained the floor, and said, we are needlessly consuming much valuable time; I move the indefinite postponement of this question, which was the sense of the society, and business was resumed. Some personal bickerings may, and probably have, unavoidably crept into some of our sessions; and some who have left business and home at no small sacrifice, for the purpose of attend-

ing this Association, have at its close departed with a feeling of disappointment that the opportunities for improvement had been so few, that so little had been accomplished which was calculated to advance the interest, or to elevate the profession. Gentlemen, one of the many means which we have at our command by which the present session may be made of great benefit is by clinical operations. I think I have observed this to be true, that in those Annual Sessions where there was the most clinics given there was the greater satisfaction. I think it is impossible to over-estimate the practical value of clinical operations. All agree that by this means more instruction may be imparted than by all others. A gentleman, several years since, gave us a very clear description of Dr. Varney's method of filling a cavity. Yet, how unsatisfactory all description in comparison with seeing the operation for ourselves.

I most earnestly desire that the Ninth Annual Session may be one noted for the value and number of its clinics.

BEST METHODS AND MATERIALS FOR TREATING AND FILLING CHILDREN'S TEETH.

BY C. S. LANE.

GENTLEMEN: I am not unmindful of the fact that this subject stands at the very threshold, as it were, of a good *Life Denture*, hence its importance, and my great inadequacy to the task. For I never write on a subject with the conviction that I can do it the best, or spread the subject before others in the most lucid and exhaustive manner; but with the feeling that I will, as a matter of duty, perform the work assigned me cheerfully, and to the best of my ability, with the time and material at my disposal, hoping it may serve to provoke discussion which may lead to a fuller comprehension of the latent Truth.

First, as to Method.

Under this head I presume it is not expected that this Paper will go into the details of packing gold, introducing and finishing amalgam, chloride of zinc, and gutta-percha, etc.; consequently I shall say little about Methods of Filling.

I do not strenuously advocate any particular mode of working; for while I find a certain method agreeable and successful in my hands, I remember that others succeed equally well by a different method.

I would, however, use the rubber dam both in treating and filling, in most of the cases if I could, *but not all*, as many cases present themselves in which the lesion is so easy of access, and the treatment and filling so simple, that the rubber dam, if it could be applied, would be an unnecessary trouble and annoyance to both patient and operator.

Again, I find a large proportion of cases in children's teeth when it is very desirable to adjust the rubber, but where, owing to the conical shape of the crown, and the gum coming

up high around it, that to do so would perhaps inflict more pain than we aim to prevent, or at least more than most children will submit to with equanimity.

And yet the road to the highest success in most cases is only by way of the rubber dam. So that we are left to our individual ingenuity in those cases to adjust and retain it, otherwise attain a less desirable result without it.

For it frequently occurs that we confer a great boon upon our patient to save a tooth comfortable and serviceable for but one year, even should it be useful no longer.

Secondly, about Materials.

If an abscess has formed and the tooth is a deciduous one, the forceps are the best medicine, and the sooner administered the better, and frequently this is the case with a six-year molar. But, if the disease has not progressed too far, the mode of treatment is filling, and must be indicated by the conditions of the tooth and that of the patient combined, for there are certain physiological conditions always present which cannot be overlooked. Some giving evidence to the experienced eye of clean blood, tone of system, and a conservative economy which encourages treatment and warrants success—whereas, in a case precisely similar in other respects, but where the opposite constitutional diathesis is present—extracting would be strongly indicated, if not imperatively demanded.

However, ordinarily, if the tooth is one likely to be required for some time to come for purposes of masticating or assisting in alveolar or maxillary development, the proper course would be to remove external cause of irritation by removing tartar or other hinderances to healthy and normal action, and thus deplete overdistended bloodvessels.

If periosteal inflammation is indicated, paint the gums with tincture of iodine, two parts, to one of tincture aconite root, or some prefer stronger water of ammonia; but the former in my hands has proved highly satisfactory.

In attending to the trouble *in* the tooth, I would remove as much as possible of the diseased tissue at the first setting, and proceed to fill, if there was no special inflammation of the pulp or dentine; if there *was* I would apply carbolic acid, or perhaps oil of cloves, stopping the cavity temporarily with gutta-percha or cotton moistened with sandarac varnish, or else wax. I give the preference to gutta-percha, it seeming, when applied,

warm to the walls of the cavity, to have a decidedly soothing effect on the inflamed dentine, for which reason it may be considered preferable as a temporary filling in frail teeth, where the cavities are situated so that water-tight fillings can be made with it.

If a tooth containing the carbolic or oil of clove dressing is comfortable after from one day to one week's probation, I would fill with gold, if the tooth was a permanent one, and the appearance of things warranted it, and I felt assured of satisfactory success in the operation—for, as yet, gold stands pre-eminent as a permanent filling. But if circumstances and surroundings *did not warrant the use of gold*, I should fall back on amalgam, gutta-percha, tin foil, or some of those white cement fillings, frequently called bone fillings.

And just here, I am aware that I tread on disputed ground when I recommend amalgam for children's teeth, as some very intelligent members of our profession hold that it is an unsafe agent to be employed here, owing to the presence of mercury, which is liable to be absorbed by the dentine and pulp, to the destruction of the latter. But I must say, in defense of the much abused amalgam, that I have not observed more mischief to children's teeth in this direction from its employment than from other agents used to the same extent. Yet, if the cavity comes in very close proximity to the pulp, it may be hazardous to place any kind of metallic substance without a layer of non-conductor, for which purpose I prefer Weston's non-irritant cement, or some of those kindred preparations.

Of course amalgam should *never* be used in the front teeth, owing to the darkness of the shade.

If the teeth are highly sensitive, the white fillings are to be preferred. The oxychloride of zinc preparations have the advantage of adaptability and facility of manipulation, but the gutta-percha pellets have the advantage of affording more immediate comfort, and being in many cases much more durable. Tin or amalgam, however, will be required in the molars unless you have an opportunity of renewing the fillings quite frequently.

If an exposed pulp is discovered, I would recommend the same soothing process as already described for inflamed dentine and pulp. When everything is in readiness, I would mix a very little of the non-irritant cement with carbolic acid and apply directly on the exposure, then mix the cement as usual, and if the cavity be very shallow, or a temporary filling, com-

plete the operation. But if gold is to be the filling, the cement is used in sufficient quantity to fully protect the first application and the case either completed at that sitting or left for another time, which is to be determined by the previous history and present condition of the case combined.

When a nerve is dead and the case is worth saving, carbolic acid and iodine may be used with excellent effect, especially if you have a fistulous opening through the alveolar process. I prepare this mixture by dissolving as much of the crystals of iodine in the carbolic as it will take up. This preparation may be varied with carbolic acid pure, or aromatic sulphuric acid.

When it becomes necessary to destroy a diseased nerve, in order to save the tooth, as it sometimes does, arsenious acid may be employed, if used with care. But this, as well as the other strong applications just mentioned, should be employed but seldom in the mouths of young children, and with greatest hesitancy and caution.

To fill roots, I prefer the white cement, such as "Cement Plomb," mixing with it a fiber of floss or cotton, in order to carry the filling with a fine probe to the end of the root. If a large apical foramen is present, it should be stopped, or the oxychloride may low through it and work great mischief. This may be accomplished by using a small piece of floss saturated in a paste made of carbolic acid and oxide of zinc, such as I have recommended in capping exposed pulps, or a solution of gutta-percha in chloroform, which, indeed, makes a good filling for the entire root.

I know that it would be eminently pleasant to be able to state just here once for all, and for every case, the *best materials* to use in a child's tooth. But *all* the materials I have mentioned and *more*, are the *best* at some times and under some circumstances. *Where and when* to use them, must be left to the judgment of the dentist, which, by the way, is another argument in favor of his being honest and intelligent.

In *temporary* teeth amalgam can be used with good effect perhaps more frequently than anything else, and in *permanent* ones, gold. But how often there is a something, or a combination of things, which tells us to try something else, and put that tooth or mouth on its good behavior for a year or more, and see what nature will do for it, for if it does not behave more liberally towards it in the future, than it now seems disposed to do, all fillings will avail but little.

Now, before I close, I want to be understood on this amal-

gam question. You remember I have already stated that gold stands *pre-eminent* as a permanent filling; but amalgam has a place, and an important one; yet this is no reason why ignorance should abuse it.

I merely wish to say, I am not a man who never uses amalgam, although I am most heartily disgusted with its indiscriminate employment in the manner I witness it from time to time.

Dr. Robinson: I think Dr. Lane need not apologize for using amalgam. In the treatment of the deciduous teeth we have to do the best we can. Very few of us ever fill deciduous teeth as we would like. The child will not submit to a long and careful operation. We have to excavate as well as we possibly can; and then fill quickly; and there is nothing that you can use as readily as a filling of amalgam. It saves the tooth better than anything I know of under the circumstances; and we only want it to last three, four, or five years. If it discolors the teeth, that is no particular objection.

The essay embodies a good deal of practical common sense; and a great many of us do pretty nearly what is said there. The writer has avoided the extremes in pretty much all cases.

Dr. Harding: From my own experience, and what I have seen in the experience of others, I believe there is very little success in the filling of children's teeth. I have noticed that after decay has reached the nervous structure of the tooth, there is very little use in filling it, from the fact that absorption ceases at that time. I never fill children's teeth with anything but gold. I never attempt to fill the teeth of children if the decay is great, or when the nerve is ulcerated. If we find alveolor abscesses, it is better to remove them. I never remove a child's tooth if I can possibly avoid it. I have a number of cases now, that are too far decayed to be filled; and I am using the different methods of preventing inflammation and pain. Sometimes I use a solution of aconite: sometimes a little soda introduced into the cavity, it being a powerful antacid. I have never used amalgam in children's teeth. I have known cases where they have been filled with amalgam when the decay had reached the nerve, producing very bad results. I find that it is much the best to retain them as long as we can without filling.

In regard to the extraction of six-year molars, I have in a great many instances filled them with gold, and had them re-

main in very good condition, until when it was necessary to extract them, it was too late for the aperture to close. That is a point of great importance in filling six-year molars in children from eight to ten years of age. The tendency of the second molars is decidedly forward; and if the first teeth are filled so as to retain them until the second molars are nearly developed, the second molars incline forward, and do not fill the space as perfectly as if they had been extracted earlier.

Dr. Knowles: I think that in the treatment of children's temporary teeth, the whole thing hinges upon whether the nerve is alive or not. It is my custom, and always has been, to use gold where it can be used; but I don't object to the use of amalgam. I think that if amalgam is admissible at all, that in children's temporary teeth is the proper place to use it. So far as mercurialization is concerned, it is probably all nonsense. I don't think anyone was ever salivated by reason of the presence of an amalgam filling.

I think a great many teeth of the temporary set may be saved, even after the nerve is exposed. Of this, I am perfectly positive. I think it is a great deal better to save the first teeth, if possible; but too great stress I think is laid upon the importance of keeping the first teeth until the second are erupted; that is, so far as the preservation of place is concerned. I think the latest ideas upon this subject are something like this: that the main body of the bone proper, and the aveolar processes are developed entirely independently of each other; that the aveolar process depends entirely upon the presence of the teeth, and *vice versa*. Whenever the teeth are absent, the alveolar process is absent; and whenever the teeth are present, the alveolar process is present. The maxillary bone and the alveolar process are separate and distinct things. It is true that one supports the other; but the size of one does not depend upon the size of the other. If the first teeth are filled properly, and in proper time, with gold, I think there is no doubt in the world but what the best possible result is obtained in this way. The absorption will take place completely around the gold, the same as it will around the enamel. I have in my possession, two specimens of this, where the gold is left entirely intact; of course projecting farther into the dentine than the enamel capping. They are interesting specimens to me.

However, in case this idea about the independence of the

alveolar processes and the maxillary bones is not correct, we may compromise matters something like this: preserve the second temporary molars until the permanent molars are well in place; after that it is not nearly so important to preserve the second temporary molars. The next tooth of importance is the eye-tooth. In my opinion, the temporary eye-tooth should be retained until the very last moment, because we all know the tendency of the permanent eye-tooth to stand completely outside of the arch. The temporary eye-teeth does at times seem to be necessary to preserve the room between the lateral incisors and the first bicuspids. But I do not consider it of great advantage to take out the first or second temporary molars, or the incisors. I think that practically it makes but little difference in regard to crowding the second teeth.

As Dr. Lane has set forth in his paper, it is infinitely preferable to take out temporary teeth with dead pulps, than to retain them; because they are likely to give pain, and the roots cease to absorb; all of the loss from the roots being probably decay. There can be no physiological absorption so long as the roots are dead; and in such cases I think it is good practice, although the teeth are not aching, to take them out, in anticipation. For certainly, the second teeth erupting, are apt to be thrown out of line, or to be retarded, so as not to appear at the proper time.

Dr. Plomteaux: What are your views in regard to the extraction of the six-year molars at an early age?

Dr. Knowles: I never extract them, if possible. I take just as good care of the first molars, as of the second. In some cases they are brought to us so entirely wrecked that they are reduced to the level of the gum, and in an uncomfortoble condition. In such cases I think it is good practice to take them out at a time considerably previous to the time of the eruption of the second molars.

If the first permanent molars are left too long, or until the second permanent molars begin to point, they will not move bodily forward; and they will tilt. If the proper time is selected, there can be no great objection to taking out the second molars; though I think the One who designed the teeth knew better than dentists, what was best for the mouth. I would even preserve a dead upper molar tooth; but would not take the same care of it as of others. I have found that a dead molar tooth is not of great value.

I do not believe in the operation of tapping, except to allow the secretion to pass out of the tooth. We all know the practical impossibility, almost, of perfectly cleaning out these teeth. Where lower molars are brought to me in a dead condition, and where they do not promise to be retained for a number of years, I think it is very much better to take them out, if they can be taken out in time to allow the permanent molars to come in place. But if that time has passed, I would retain the roots as long as I could, so that the twelve-year molars would come in position. Then, when the articulation is well established, and the roots are well developed, there is not the same tendency to tilt or interrupt the articulation that there would be at an earlier age.

TREATMENT OF THE "SIX-YEAR" MOLARS.

BY W. H. ROBINSON.

Could we, as an association, have 100 average children pass before us, having these teeth erupted just enough to allow a careful examination of their coronal surface, we would find quite a per centage of these—perhaps as high as ten per cent.—that need filling. These teeth are not decayed. They are in about the same condition nature left them when her formative cells made their last deposits. There has been no disintegration of tooth tissue. The trouble is there never was proper integration of it. We meet with this same condition quite frequently in the wisdom teeth. It is arrested or imperfect development. Hereditary tendencies, no doubt, have their influence. But the constitution condition at this age has a marked influence on these teeth. The rapid development of the general osseous system, and its imperative demand for lime phosphates and constructive tissue, may deprive these of their proper allowance. Be the antecedent causes what they may, the fact is, a class of teeth meet us that need dentistry as soon as they are visible, and will soon be lost unless the dentist can remedy nature's defects.

To save these teeth for a few years is an easy matter, and as these are the main masticators, when the temporary molars are defective, this is the proper course. But when the temporary molars are sound what shall we do? Ultimately we shall have to extract most of them. Dentistry, that human ken says is practically and theoretically perfect, cannot *save*. We should bear this fact in mind and let it guide our present treatment. In some subjects, where the constitutional and hereditary tendencies favor the longevity of the teeth, and the development of the enamel on their lateral walls is in the highest state of perfection. These teeth can be permanently saved; but as a rule they are doomed to extraction, and the sooner the better.

A tooth that is *ab initio* defective, bears strong presumptive evidence that this defection is not limited to the locality where it is visible, but pervades the entire tooth structure, and the constitutional diathesis, if not the cause of this, usually favors it. Against such a combination of destructive agencies, the best skill is only temporary and futile.

Closely connected with these *ab initio* defective teeth, is another and a much larger class. The enamel is not soft or friable when erupted. The prominences of the coronal surface convolutions are high, their sulci deep, irregular and numerous, supplying just the conditions that are almost sure to develop immediate and fatal caries. While the pathological status of these two classes of teeth is widely different, they require the same practical treatment, and, alike unaided by art, soon terminate their career of usefulness in fatal caries. We find some of the frailer specimens aching in less than a year after eruption. [Just here we had to stop writing to extract one of these teeth for a little girl not eight years old. The point at which the destructive agents had begun their work was peculiar, being the centre of the coronal surface of the frontal buccal cusp, a place we do not recollect of ever having noticed before as the initial point of decay; and the cause was no doubt *ab initio* defective enamel. Two of its companions were hopelessly gone, and we think from the same cause.]

We have said practically these two classes of teeth require the same treatment. What is that? Those that have the enamel of the lateral walls in the most perfect state of development, and constitution tendencies favorable, and the removal of the carious parts, leaves the pulp intact and the walls firm and strong. Adapt your treatment to their permanent salvation. But even in this class of teeth, if the decay is extensive and leaves the lateral walls frail, permanency is doubtful, and if it involves the approxical walls, extraction.

In condemning these to extraction we condemn all below this standard. In regard to treatment that is only intended to save these teeth for a few years, we have our doubts. If in a class that there is reasonable ground to suppose we can permanently save, all right. But in most other cases its utility is doubtful. If it necessitates devitalization or retains these teeth in a diseased condition of crown or roots, to the injury of the other teeth, it cannot be too severely denounced.

Our 100 children are now ten years old and we take another

careful look at their molars, or where their molars ought to be, for by this time ten per cent. of them have been extracted, ten per cent. filled, and about ten per cent. are hopelessly decayed and should be extracted.

We find these filled and decayed teeth in various stages of preservation and destruction. In some of these the nerves were capped, in others devitalized and the frail shells filled with oxychloride, Hill's stopping amalgam and gold. Some of these that were filled before disintegration had made much progress, and in which the parts preternaturally susceptible to decay or *ab initio* defective were small and confined to a few accessible points, are doing well and bid fair to reach a hale old age. In continuing our investigation we meet another class of these molars not *ab initio* defective, and they differ from the second class named in having no extensive centres of caries developed in them yet. The corrugations of their grinding surfaces are prominent, their sulci deep and pentrating, and a careful exploration of the deeper pits in these molar cañons reveal numerous points of incipient decay scattered over the grinding surface the buccal sulcus and their approximal walls. As a rule we think few of this class of teeth are permanently saved.

Their treatment involves several small operations, often in localities difficult of access, or one or more complicated and extensive operations, with a consequent sacrifice of tooth structure, and in defiance of the most perfect operations, new centres of decay are apt to be developed, requiring new operations and consequent waste of tooth structure that consumes them before adult age, or at least leaves them in a very precarious condition.

We take another look when our children are sixteen years old. Many six-year molars have gone to wreck with their cargoes of oxychloride, Hill's stopping amalgam and even gold. The cause of failure in these cases has not been so much unskillful practice as erroneous theory, for we find when the proper class of teeth have been filled at the proper time failures have been rare.

We place our figures at this age about as follows:

Extracted, 15 per cent.; one-third of these had been filled. Have been filled, 25 per cent.; 15 per cent. good; 5 per cent. doubtful; 10 per cent. immediate extraction. Need filling, 10 per cent.; can be permanently saved. Need extraction, 10 per cent.; cannot be permanently saved.

This leaves forty per cent. of the average six-year molars all right at this age. We do not assert absolute accuracy for these figures. The poorer classes of society show fewer fillings, and the upper classes more, and yet we think an examination of all the children on our Coast would show more than sixty per cent. of these teeth defective at this age.

This is the most important age in the treatment of these teeth. The subject has arrived at an age that enables us to study these teeth not only as to their structure and the constitutional tendencies of their possessor, but we can study them in their relations to the other teeth and the integrity of the alveolar arch. The bicuspids and second molars can now be considered in their relation to the six-year molars. We should absolutely settle the question in our own mind whether we can save them permanently, and having settled this point, "*no*," extract immediately. I am aware that this is a difficult point to settle. Perhaps there is not a more difficult proposition in the whole range of dental practice to solve than what should be the fate of some of these teeth.

We must remember that the feelings of the subject and perhaps our own are against extraction, and on general principles a tooth should never be extracted without an intelligent reason for so doing. What classes of these teeth should we now extract assuming the integrity of their approximal neighbors?

I. All roots should be extracted.

II. All in which the periosteum is diseased, in these the pulp is usually dead or exposed, and either of these troubles justifies extraction.

III. All in which the disintegration of tooth structure is extensive and complicated.

IV. All that have involved the approximal walls of the second molar and bicuspid in the carious condition of their own especially when crowded.

The status of the bicuspids should influence our treatment. But in general the fate of the six-year molar should be decided and executed before the second bicuspids are developed.

We all agree that there is a class of these six-year molars that cannot be saved to adult age, and their prognosis is plainly indicated.

But here is the rub. There is another class that no dentist can be certain about. Some say they can, others that they cannot be saved permanently. Who shall decide? Each one for himself. Let us suppose a case: a child ten years old is

brought to Drs. A. and B. Its teeth are all sound except, say, its lower six-year molars. A. decides he can save the right one. B. decides the left one cannot be saved. A. fills. B. extracts. Now it happens they were both mistaken. The extracted tooth could have been saved, and we give a verdict against B. for malpractice. A.'s tooth failed in five or six years and was extracted. We do not blame him. Now look at the average results. Where B. extracted his tooth six years ago, has been nearly closed by the approximation of the other teeth, and the second molar has an inclination forward that is not desirable, but both it and the bicuspid are sound. Where A.'s tooth has just been extracted the space is the width of the tooth and will close but little, and its antagonist is for masticatory purposes useless. Whose practice was the worse or better? We censure both, and certainly practice that is worse in its results than sacrificing a sound tooth is deplorably *bad*.

We take a last look at our one hundred mouths when our children reach twenty years of age. The changes have not been as great as in the four years preceding sixteen years of age, but quite similar. We have to place about five per cent. of these that were pronounced perfect at our previous examination among the defective, and add ten per cent. to the number filled, and guess at how many could have been saved by proper treatment. This gives us about thirty per cent. of these teeth filled and in the mouth. Let us look at them carefully. We find all grades and conditions from the ulcerated root that shows color of auriferous deposits or metallic oxides up to the pearly crown with its golden star that has piloted it safe so far and bids fair to light it on to good old age. The class of teeth that we hold good have been those in which the constitutional bias was favorable and the decay central coronal. The average amalgam or gold plug has saved many of these. But when the approximal walls were involved and the caries extensive, involving the pulp, preservative dentistry has been a failure; yet in these very teeth we see some triumphs of skill that have saved under very adverse circumstances some very frail teeth; we might add worthless teeth, for their dissolution is certain and only a few years in the future. Here again we find these extensively filled teeth and these extensively restored devritaloyed remnants very difficult teeth to deal with. Parents, children and dentists have paid, suffered and labored to save them. Parents don't like to have

a tooth that has cost so much extracted. Children always oppose extraction, and the operator even when he sees utter disintegration surely approaching is loth to condemn the work of his hands and his judgment in former years. And yet these teeth cannot be permanently saved. Their retention has done harm, is doing it now, and will continue to do so till in a few years their total failure leaves this important space vacant for life. Had the dentist urged extraction when these teeth first came under his care, compliance would have been easier. And our criticism on the operator is that unless your treatment will retain these teeth with pulps intact, and with that degree of strength that promises fair to carry them safe to middle life, or at least deliver them there in the condition we find them when the person is approaching adult life. You should in all such cases extract them and the younger the age at which it is done the better. Considering these teeth alone we would make this invariable rule: Save the six-year molars with pulp intact and ample body of tooth structure to protect till the person is past adult age five or ten years or do not undertake to save them at all. The condition of the other teeth as elsewhere stated would modify this practice.

Having looked at the molars we will now look at where the molars ought to be.

I. Where these teeth were extracted before the child was ten years old we find the second bicuspid and molar have to a greater or less degree migrated into this six-year molar space, and in a very desirable and becoming manner occupy it fully. In others this desirable condition is approximated. In April, 1877, we were called on to treat the six-year molars of a boy fifteen years old; a good subject practically and constitutionally, and teeth above average in structure, but in two of his six-year molars decay had reached the pulp. In one there was quite extensive decay involving most of the grinding surface and but slight exposure of the pulp; in the other a small deep crown cavity complicated the pulp considerably. The tooth with slight exposure and extensive decay we capped and filled permanently, and it has done well. The other we capped and filled temporarily. The result was pulpetis. The tooth was a symetrical upper molar and all parts of the crown enamel perfect except the cavity mentioned, and we have no doubt about it being an extra favorable case to save by devitalization. We would like a vote of the Association indicative of the proper treatment in that case. Devitalization or extraction, but which?

We extracted with some misgivings as to it being the better course. While writing this essay we made a special examination of the mouth and are satisfied we made a mistake in not extracting both teeth instead of one. Our work on the tooth filled (we being judge) was perfect. But in the other case an examination of the jaw would not reveal the fact that a tooth had been taken out, so close and natural was the approximation of the second molars and bicuspid, and in our opinion the present status of this case is incomparably better than had we devitalized that tooth and been ever so successful.

The approximation of the subjacent teeth when the six-year molars are gone is a prime factor in their prognosis, and a point in dental practice well worthy the serious consideration of the profession.

We have got to make a new departure right here. Study carefully the age and conditions, when it is most advisable to extract the six-year molars, and what treatment their spaces and the adjoining teeth require to obliterate this place and have the subjacent teeth removed in and occupy in the most natural and desirable manner. And until thorough investigation, accurate observation, and scientific prognosis make this plain, we must grope our way in the dark. We agree to the professional verdict: "The importance of the six-year molars." But we must remember that this importance is not due to these teeth "*per se*," but to the place they occupy.

If we can make other teeth occupy this without detriment to the oral economy, the special importance of the six-year molars vanishes, and the new occupants assume all the importance once attached to them. This is why we advocate the immediate extraction of all six-year molars that do not bid fair to reach middle life average good teeth. If the worthless ones are not extracted they occupy this important space till the osseous system is developed. *Their failure then leaves it vacant for life.* Hence we see a peculiar importance attaches to the early and proper prognosis of these teeth that *does not attach to other teeth equally or more important*, say the upper central incisors for illustration. We are never called upon to choose between their salvation or extraction. Our duty in their treatment is to save them. Save them permanently if possible; but better save them temporarily than not at all. But this is reversed in six-year molar treatment. The worst treatment of them we can be guilty of is saving them temporarily. By temporarily saving them, we mean any treatment

under which they are lost before the subject is from 25 to 30 years old; or any treatment that necessitates devitalization and extensive restoration before the person is 25 or at least 20 years old.

In operations on these teeth we are apt to trespass on their approximate neighbors. All of us have opportunities to examine mouths in which these teeth were extracted at an early age on one side, and allowed to remain in a carious condition on the other side. When extracted early the approximate sides of the molar and bicuspid are usually sound, but on the other side, where they were allowed to remain in a diseased condition, we seldom find them so. They are almost sure to involve their approximate bicuspid or molar or both of these teeth in serious if not fatal caries. Even where quite extensive efforts have been made to save them, their presence is injurious and fatal to the adjoining teeth, and indirectly so by interfering with operations on their approximate walls. They are not neutrals either in relation to the other teeth or the space they occupy. They do positive harm. Every year beyond ten they are allowed to remain in the mouth, the harm they do is greater. If we see any of their remains in mouths much over this age, we see evidence that their presence has done harm that neither nature or art can remedy. Like the surly dog in the manger, they have occupied this important space in the mouth, and would neither eat themselves or allow their neighbors to do so.

We will now take a look at our 100 adult mouths to note this six-year molar space. If extracted when the subject was young, and in the superior maxilla, we find the bicuspids have receded. There is probably half a line or so between them. They do not crowd the carnives. This condition greatly facilitates operations on them, and is so salutary in its effects that it often arrests incipient caries. In many cases the mutual approximation of the bicuspids and second molar has brought them nearly in contact, and the nominal axis of the teeth preserved. Could we definitely prognose these cases, we would be justified in extracting even some molars that we could save. Room does much toward saving teeth. In the lower jaw we see nearly the same conditions, only a much greater tendency in the posterior molars to deviate from their normal axis, and lean forward. This deformity is seriously objectionable in many cases; and the best safeguard against it is early extraction. The angle of deviation in most cases clearly indicating the age at which the first molars were extracted, first molar

roots favor this leaning of the second molars, as they allow their crowns to approach the bicuspid but prevent the approach of the root. Breaking away the alveolar process in extracting has the same effect. Alveolar abscess the same effect, as it favors extensive absorption of the process after extraction, and teeth do not approximate much if the intervening process is absorbed. As these teeth come under our care from time to time, and we decide they cannot be saved permanently, how to do it is an important matter. Having thus decided, our best possibilities should demonstrate that our prognosis was correct. These demand and should receive the most thorough treatment. What is that treatment? I hear some one say a thorough preparation of the cavity and a perfect gold filling; nothing else will do these teeth justice.

Have we all agreed to this? If so, we are just like the council of mice, who, with entire unanimity, agreed that the only proper treatment for the cat was to put a bell on her. But who could do it? Any of them, if the cat would permit. But "there is the rub." How many children will let the operator thoroughly prepare and fill these teeth? Even when young children do as well as can be expected, with their little mouths, unsteady heads and sensitive nerves, it is difficult to operate with that thoroughness and certainty that life-long operations require. Hence, because of the importance of these operations, we would only recommend gold and permanent operations in exceptional good subjects. Oxychloride requires the absolute dryness of the dam, and is poorly adapted to the heavy mastication these teeth perform. The same is true of gutta-percha and its compounds. If gold is preferred by the parents, and their children will not submit to the conditions and time necessary for dam and mallet operations, the soft-gold cylinder and hand pressure gives us a plug that has all requisite conditions of a perfect filling except hardness, and this sufficient to last till adult age. That very unprofessional and much abused compound known as amalgam, is very useful in saving these important teeth. We can make a success with this, when with any other known material we would fail. It can be properly manipulated either with or without the dam and under such adverse circumstances, that we give our hearty recommend in many of these cases. Many good operators recommend tin foil, and we know of no serious objection to it. A word here in regard to the effect of dense compact plugs in *these*. We, in common with some others, hold that tooth struc-

ture is susceptible to impressions from the pressure of densely impacted fillings; that these impressions result in disintegration of tissue near the margins of the plug; that this is more liable to happen in young subjects than in those older. And although it may not happen very often, yet it does happen in young frail teeth and solid impaction, and soft-gold foil or tin foil, or any of the ordinary materials used in temporary filling, would not be as apt to induce this destructive tendency.

One general objection that is urged against the extraction of the six-year molars is, it mars the symmetry of the face. We regard this objection pure moonshine. We never saw a face marred by the extraction of these teeth; nor do we believe the shrewdest adept can tell by the closest external scrutiny of the face whether these teeth are in or out. Certainly only the alveolar processes of the upper maxilla can contract; and but little absorption results from the extraction of one tooth. The same is true of the lower maxilla, only the processes change to any visible extent. And where there is a tendency to the posthumous jaw or the teeth, or the teeth are irregular or too much crowded, the extraction of a tooth on either side is unquestionably good practice; and unless the permanency of the six-year molar is beyond question, it should be the tooth, especially in young subjects, or special causes should indicate another tooth.

Dr. Lane: I notice a very great change in the opinions with regard to the extraction of six-year molars, as expressed at this session of our convention, and the session of three years ago. At that time the subject was discussed, and the opinion seemed to prevail that it was wise practice to retain the six-year molars until about the time of the eruption of the twelve-year molars. I presume that increased light and expeience have caused this change.

I admire the paper just read by Dr. Robinson; but I do not know what we will come to if we sanction such a general slaughter of the six-year molars, as he proposes and defends; for the third molars are generally very frail and short-lived, which will leave us with but one set of molars, in many cases. And then again, I think that we should look at the immediate benefit of those six-year molars in masticating, when the system is being built up; when the youth needs the services of these teeth. I think I should be pretty sure that they were not going to last long, before I would sacrifice them, from the fact that their immediate service is in demand; and

their service will be in demand for all time to come; that is, taking everything into consideration that we may natuarally expect.

Then, again, it is very hard for us to know that these six-year molars are not going to last until the patient becomes 20, 30, or 40 years of age. They may look frail and short-lived; and yet we know that the constitution undergoes such radical change sometimes, that a tooth will not retain the filling very long, and will decay around the filling a litile way, and seem to be absorbed by the acid secretions of the mouth; will, in time, become strong and hard; as the system undergoes that change, the agents that are acting upon that tooth perhaps may be modified, as tone and strength are given to the system; and the tooth seem to be fed better, and it will resist decay, and stand a permanent filling, ten years hence; and we may ultimately save it for life. I claim that in such a case the patient is very much better off than if we sacrificed it. We ought to be conservative in our practice, and not slaughter these teeth recklessly, in view of the fact that the wisdom teeth are so frail and short-lived, that we leave the patient with very poor means of masticating, and a fair prospect of coming into the hands of his physician.

Dr. Hurlburt (of Springfield, Mass.): In the College at Philadelphia, I was taught to preserve the six-year molars, and I have faithfully followed such instruction. But I have found in my experience, that many of my best efforts, with time and expense to the patient, have resulted in failures, at which I have been mortified. In consultation with those older than I am, I have found that they are very much more liable to sacrifice the six-year molars, than to preserve them, after the nerves are destroyed, and the alveolar is abscessed. You will probably be governed by the circumstances of each case. No absolute rule can be laid down by which we can decide on general principles what shall be done with certain teeth. The cases must decide themselves. It should be our practice to let our judgments govern us in all cases.

I think we have all been interested in this "new departure," which has emanated from St. Louis, New York, and Philadelphia, from gentlemen well qualified by their experience to judge of its truth and worth; and I think it is well for us to listen to what they may say in this "new departure." I cannot swallow it whole; but there are points in it which will be well for us to heed; and I believe that out of this agitation there

will come a really good result, not only to us, but to our patients. We sometimes look upon our profession as if we were at the very acme of perfection of our usefulness in this world, at a hight beyond which we cannot go. We have grown rapidly in the last few years; but I believe that we have as great a future in store for us. I say all honor to the inventors. Let us encourage them in their experiments and inventions, I believe that a filling is yet to be invented, and will be invented, that shall have the power of resisting decay, like gutta-percha, with the durability of amalgam, and with the color of os artificial, that shall be the general filling, in the preservation of teeth; and *that* will be the day of triumph in dentistry. It may cheapen the price of individual operations, but it will redound to our good, and through us to the good of the community.

Dr. Harding: Dr. Robinson, in his paper just read, states, that by the early extraction of the six-year molars, the place will be more rapidly filled by the bicuspids coming earlier. There is no hope of any filling of the space by the bicuspids. You have all observed where proximal fillings have been made, that the tendency is very positively forwards, and that those spaces have been filled. The entire filling of the space must be done by the second molar.

The question should be decided very early as to whether these teeth must be extracted; if they are to be extracted, the sooner it is done, the better; then the twelve-year molar comes forward and fills the space; and you will find the advantage then in the articulation. In 90 out of 100 cases, you will find a decided advantage, from the fact that afterwards any tooth on the inferior jaw may be extracted without losing the entire use of one of the superior teeth.

Dr. McCowan: In the treatment of six-year molars, each is a case of itself. I save all that I can, for any length of time, hoping for some improvement or reconstruction of bone. We often have what appears to be, chalky, frail teeth, which, if they can be protected for three or five years, we will find a much more solid tooth to work on, and may be able to save it through life. I am not in favor of extracting the six-year molars, with any hope of improving the articulation by the other teeth coming forward. They come forward unequally. A second permanent molar will come forward to a certain extent, and the wisdom tooth, also, leaving an opening between,

into which the food is continually impacted, which is apt to cause a great deal of irritation. It is my experience that there is a fair probability of losing the third molar or wisdom tooth, or the second molar, because of the extraction or loss of the first, on account of this continually open space, causing trouble in the gum, sometimes severe inflammation. It seems as if nothing but extraction would give permanent relief. Very frequently I am called to treat cases of this very kind. In my treatment, I generally shape the opening so as to facilitate the clearing, somewhat after the plan of Dr. Arthur, a V shaped opening, leaving the proximal points of the two quite convex, so that food packed in between will not be crowded down between the teeth, and encroach on the roots. The removal of the six-year molar, leaves a very considerable space; and in my experience, it is very apt to cause a loss of the use of the opposite tooth to a considerable extent. I have often noticed this pitching forward of the tooth; and the more they get beyond the perpendicular, the more are they inclined to go in that direction, and it causes a thickness and exostosis at the roots: and finally, almost a tipping over of the teeth. I would advocate the filling of the six-year molars, where it seemed at all possible. I do not often attempt to cap an exposed pulp in such cases; but anything short of that, I would attempt, with a fair hope of success. It is a favorite practice with me, in treating these, where they are badly decayed, to excavate as well as I can; coat the cavity with gutta-percha dissolved in chloroform, and then fill the main bulk of the cavity with oxychloride of zinc. That is frequently my only treatment, for the time, with children. It will harden, and make a filling, good for from two to four years. By putting in the coating of gutta-percha, quite thin, I think the shrinking by evaporation would be so little as not to interfere with the adaptation of the filling, and it answers the purpose, in my hands.

DR. LANE: You would'nt let that gutta-percha preparation extend to the crown?

DR. MCCOWAN: To cover the entire dentinal cavity, and as a usual practice, with a permanent filling, I merely remove sufficient oxychloride to make an anchorage for the filling; and in that case, I remove any remaining gutta-percha that may have got too close up to the crown, as it is not so solid as a gold filling. I would not remove the gutta-percha in a temporary filling.

REPORT OF COMMITTEE

ON

OPERATIVE DENTISTRY.

CLARK L. GODDARD, *Chairman.*

The past year has been fruitful in inventions and aids to operative dentistry, and new theories have been advanced which have been long preparing.

The committee find their powers scarcely adequate to the task imposed upon them.

We shall try and enumerate in the first place the appliances somewhat in the order in which they were presented to the profession:

First are Weston's Cavity Caps, for capping pulps. These were presented to the Society at the last annual meeting, having been sent to one of the members with no explanation of their use. They are made of platinum, concave, the edge slightly raised and with a little spur on the convex side by which they may be siezed with pliers.

They are designed to be filled with cement of some kind and then placed over the point of exposure, thus forming a firm foundation to be covered with gold or some other durable filling material. They are made of various shapes and sizes suited to the most usual cases.

Weston's name appears again in connection with a Non-irritant Cement, for capping pulps. It is mixed with water and hardens like plaster of Paris. Indeed, there is a strong suspicion in my mind that they are identical. It has no irritating properties and has proved, in my hands, an excellent material for capping. In many cases it becomes, in a few minutes, hard enough to pack gold upon, but not as hard as the various oxychloride preparations. Used with the cavity caps, it should prove a very valuable means of preserving pulps alive, and forming a foundation for a gold filling. It

would at least form a good substitute for the capping of oxide of zinc and carbolic acid, which does not harden at all, and may be covered with some harder cement.

Various oxychloride cements have been presented by different manufacturers which give good satisfaction.

Diamond disks, made of brass, copper, or nickel, into which diamond dust has been incorporated, have been in use for a few months. They are far superior to the corrundum disks, being very thin and strong, and leaving the cut surface much smoother. They are very highly spoken of by those who use them.

As a substitute for these, we are presented by Dr. Knowles with a thin disk of brass or iron, coated with corrundum. The disk is first covered with shellac and dipped in heated corrundum powder. They are much thinner and stronger than the ordinary disk.

Tape has been made by coating thin strips of brass in the same manner. It can be used when ordinary tape cannot, as moisture does not destroy but increases its effectiveness.

Dr. Knowles has also presented us with a formula for mixing rubber and corrundum flour for making polishing wheels. These give a high polish to gold fillings, almost a burnished surface. They are mounted on screw mandrills, but as large points only can be used in that way, it has been suggested to make small points with hard rubber shanks, of the shape of wooden points used in the engine porte-polisher. These may be made of various shapes and sizes.

There has been considerable difficulty in thoroughly mixing the powder and rubber, and we owe to Dr. Goe the idea of making the mixture by dissolving the rubber in chloroform, when the corrundum can easily be stirred in.

Several new chairs have been manufactured. For a cheap chair, Archir's new iron one seems to be the best, but for perfection, we must look to the Wilkerson and the S. S. White new chair. The latter seems to have every movement that can be desired, especially now that it has the hydraulic arrangement for raising.

Our dental engines have improved hand-pieces which no saliva can enter, and which, by a cone journal, can be tightened as fast as worn, so as always to run true.

Chappell's set of pluggers contains some points very highly recommended.

The controversy about cohesive and non-cohesive gold is carried on as vigorously as ever. Neither side seems to have

gained during the past year. The advocates of non-cohesive foil claim, as ever, that theirs is the most scientific manner of operating, and yet admit that in a great many cases they must resort to cohesive gold, either for filling entire cavities or at least for guarding and protecting their proximal fillings.

We have again offered the profession by Williams, what was presented by Kearsing and afterwards by Blake. It is styled Colored Gold. It is a mixture of gold and platinum, the latter being coated by the former to form a cohesive surface. Fillings made of it have a grayish or bluish appearance, which is claimed to resemble the color of the teeth; but as the imitation can never be perfect, it must show at once the attempt at deception.

Some new amalgams have appeared which give excellent results. Chase's "Stannous Gold," as he calls it, containing one-fourth gold, will be most excellent if it fulfills his expectations.

In our own city we have an amalgam made by that tireless and faithful experimenter, Dr. Sichel, that promises great and good results. In the test-tube it does not leak, in the mouth it does not discolor, and it hardens so quickly that the plug may be nicely finished at the first sitting. What more can we ask?

In regard to amalgam, it must be admitted, even by the most enthusiastic operator in gold, that its use is increasing among our best men, the men who really represent the profession. Since the statement of Fletcher that all plugs of cohesive gold leaked, and that plugs of his amalgam did not, there have been experiments to test the truth of his statement, and, although it has been proved that he was mistaken in one respect, and that cohesive gold plugs can be made that do not leak, it has also been learned that *some* amalgam plugs do not leak. This assertion, from so many different men, can not be denied. Yet, although some amalgam plugs will not leak, a great many do, either from fault of the material itself or from faulty manipulation. Since this material gives, in so many cases, good results, the experiments will be taken advantage of by those who cannot do good gold work, and who, consequently, are not able to judge in what cases amalgam is best. They will use these arguments to persuade patients, who do not know, that the simple insertion of a filling is not the whole practice of the dentist, and that it is merely the end and not the whole of an operation.

Now, that the new departure creed is promulgated by Flagg,

Palmer & Chase, what may we not expect? It is indeed a new departure—the claim that the highest excellence is not attained by gold, but by plastic fillings. The creed cannot be sneered at, for it is advocated by three men who firmly believe what they say. It is as great a departure as that of homœopathy from the old school. I am sure many of us have been surprised to see how well and long our temporary fillings have protected teeth and prevented decay. May we not be wrong in calling them always temporary fillings? The question is open to argument, and the theory to experiment. It cannot be settled by discussion alone. Time only will tell. It will arouse those, who have implicit faith in gold, to greater efforts to prove that they are not mistaken; and it will encourage those who have not been able to do all they wished with gold to try other methods. It will let them know that they are not the only ones who are not infallible, and stimulate them to further exertion.

A new theory, which is worthless, does great good in the opposition which it arouses. We are sure, then, that the new departure creed will do an immense amount of good, though whether in the way its founders anticipated, time alone will show.

June, 1878.

THE TRANSFORMATION OF PULP INTO DENTINE.

BY S. E. KNOWLES, M.D., D.D.S.

To my mind no subject can possibly be more entertaining or instructive to those of our profession who are intelligent enough to wish to occupy a position above that of a mere craftsman, than to be fully acquainted with the peculiarities of the dental pulp.

How many amongst those present at this time have a definite understanding of the origin, functions and possibilities, which lie dormant within it, ready to be called forth under favorable conditions, in illustration of the unbounded resources of the animal economy. How often has each one of us almost shuddered to witness the manifestation of intense suffering, by some unfortunate patient, whose sudden start has aroused our apprehension of having uncovered its horn-like process, until we have almost become accustomed to consider its presence within the tooth as a most unfortunate circumstance, wishing over and over again that there was no such organ.

If, however, you will have the patience to hear me through, it will be made evident to your minds, that it is an essential part of the tooth, being concerned, not only in the development of the dentine, but in its preservation and maintenance, during the vicissitudes through which the dental organ is destined to pass.

Without entering into too great detail, let us briefly consider its mode of development. In common with the balance of the dental tissues, it has its origin in a reduplication of the mucous membrane, or more properly speaking, of its epithelial coat. The earliest appearance of the organ immediately concerned in its formation, is that of a papilla, which arises from the floor of a pouch-like cavity formed by the approximation of the external and internal edges of the primitive dental groove.

When perfected before the process of calcification has commenced, it is of a form corresponding more or less perfectly, with the future form of the dentine, and consists essentially of a layer of cells, having processes projecting, both externally and internally, and which are disposed upon its outer surface; these cells are the odontoblasts or dentine builders, and are in relation with the mass of soft tissues, consisting of blood-vessels, nerves and connective tissue, which form the balance of the dentinal organ.

The calcification commences upon the peripheral surface next to the enamel organ, and progresses from without inward until the dentine is completely formed; which, however, does not take place until the tooth has been erupted for a considerable length of time. That portion of the soft mass remaining, after the complete formation of the dentine is the body, known to us as the dental pulp, an examination of which reveals the fact that there has been no essential change of structure, consisting as it does of an external layer of dentinal cells, with both external and internal processes, connective tissue, blood-vessels, nerves, etc.

The dental pulp may, therefore, be defined, as the formative dentinal organ considerably reduced in size, whose superficial layer of odontoblasts have their external processes very much elongated which occupy the dentinal tubes, constituting the fibrillæ described by Tomes; these processes are, therefore, to be considered as a portion of the dental pulp, which fact is almost always overlooked when speaking of it.

Various views are entertained as to the minute detail of the formation of the body of the dentine; but all agree in this fact, that the dentinal cells and their processes, are intimately concerned in this operation. The processes remaining after the perfect formation of the tooth, which are contained within the dentinal tubes, still retain their potency; but this power of organizing dentine is limited to the external processes of the dentinal cells, as is evinced by the phenomena attending calcific deposits within the body of the pulp, presenting, as they invariably do, a structure entirely different from that of secondary dentine, being but an aggregation of globules without dentinal tubes. At the time of the eruption of a tooth, only a certain definite portion of the original dentinal organs has been metamorphosed; owing to this circumstance, we are accustomed to speak of the pulp and dentine as entirely different structures, which distinction may properly be made; but the fact that the relation between these two tissues is constantly being altered,

must not be lost sight of, for, strictly speaking, the operation of conversion of pulp into dentine continues at intervals until frequently in old teeth, the mutation is complete.

The dental pulp as met with by us is, therefore, the result of a temporary balancing of the formative forces. Let us now consider some of the conditions which disturb this state of equilibrium. The most frequent cause is no doubt the occurrence of dental caries, in which case if the solvent action is sufficiently slow, there are two modes of manifestation of this reserve formative potency of the pulp; by calcification of the contents of the dentinal tubes, and by the addition of a mound-like mass of dentine at that portion of the pulp chamber nearest the point of attack which is dense and well organized in proportion as the carious action is retarded. All the recent authors deny the participation of the vital forces in caries; even the younger Tomes, in an appendix to the latest edition of the work on dental surgery, totally denies the modifying action of vitality. One of the phenomena illustrating the formative action of the pulp, supervenes under certain other conditions, viz: if a cavity be made in a perfectly sound and healthy part of a tooth, and thoroughly filled, so as to be impermeable, the same blocking of the tubes is observed.

I do not know whether the mound of secondary dentine would be formed in case the nerve was almost encroached upon; but in all probability it would; as a sufficient cause stimulation would be present. These facts would seem to indicate that the formative action of the pulp is brought into requisition, the tendency of which is to counteract to a certain extent the destructive action of caries.

In the treatment of dental caries by filling, in teeth having vital pulps, this same process of calcification of the contents of the tubes, almost always ensues; the rate at which it takes place varies considerably. Sections of teeth which have been thus treated, give positive evidence of the response of the dental pulp.

This accounts for the gradual disappearance of the sensitiveness to thermal changes observed after the lapse of a few months. At this point it is proper to diverge somewhat, in order to point out the advantages of filling temporarily in case of partial exposure of the pulp, or even in cases in which the intervening layer of dentine is very thin; for by proceeding in this manner the irritation arising from sudden thermal changes is almost completely obviated if a proper selection of filling material has been made.

In so doing, it is necessary to be careful not to allow the pulp to suffer from injudicious use of materials having caustic action. The object of proceeding in this manner, is to confine the action within the limits of the phenomena which are included in the definition of the term stimulation.

In cases in which a metallic filling material has been made use of, even if a layer of non-conducting substance has been interposed between it and the thin layer of dentine, the shock attending a sudden change of temperature is sufficient to cause the pulp to suffer from super-stimulation, and to pass through the stages of irritation, congestion and strangulation, until eventually, if not relieved, the death of the pulp ensues. In decay at the gingival margins, which is the most difficult to control the disposition to retard on the part of the pulp, fortunately appears to be well marked; frequently, in case the cavity becomes self-cleansing by reason of spontaneous reduction of the walls, the decay is so much retarded, as to remain almost in a static condition; provided, of course, there is a coincident suspension of the exciting cause of decay.

This decided recuperative action of the pulp in case of caries in this location may be readily accounted for, when we consider the proximity of the pulp to the surface of the tooth. The gradual wearing away of the masticating surfaces of the teeth, will induce the formation of secondary dentine, at almost any period of life, which process conforms closely with that induced in advanced years; with this difference that in the latter case the dentinification is more complete. In gradual recession of the gums, there is almost always present some caries, and the result is almost exactly the same as in marginal decay, differing only in degree.

The dental pulp at times displays a vitality almost marvelous. After the most prolonged exposure of a portion it has by appropriate medicinal and surgical treatment ceased to exhibit troublesome symptoms, and has resumed its normal functions. Cases are reported of the partial sloughing and the subsequent recovery of the remaining portion. There recently came under my observation, a case of alveolar abscess in connection with one root of a lower molar; the nerve in the other root being undoubtedly alive.

Such cases certainly are valuable hints as to the possibility of saving pulps even under the most unfavorable circumstances, but in order to obtain the most certain results it is necessary to preserve intact the odontoblasts at the point of exposure, otherwise in case of their having been removed, a

cicatrization at the point of lesion is the best result attainable. This is no doubt the condition in cases in which the secondary dentine fails to appear after capping, and is frequently disclosed during the complete removal of a temporary filling.

In this paper several points of practical importance have been touched upon which I trust will be fully and freely discussed, thus enabling us, by interchange of thought, to increase our usefulness to those who confide themselves to our keeping.

Dr. Robinson: I think Dr. Knowles, in his paper, quotes Tomes, in saying that caries is not the result of vitality. I believe that certain kinds of caries are the result of vital action. Death is, of course, the negative of vital action. I believe that, in many cases, it is the result of abnormal vital action. I have seen cases where a certain tooth has been filled quite a number of times, and immediately after that filling there was very rapid destruction of the tooth structure; a sensitiveness immediately after the filling was put in. Enamel is a vital structure, and so is dentine. We have fifteen per cent. of animal matter in enamel, and about thirty per cent. in dentine. If we have vital or chemical disintegration, it usually acts on the mineral portions, leaving the animal matter in the condition we find it when excavating. It seems to me that vitality was the cause of it, or negative vitality. I hold that, in a certain class of cases, the caries is caused by arrested vital action.

Dr. Knowles: I do not wish it to be understood that I do not think vitality has anything to do with the phenomena attending caries; but I think my friend, the Doctor, fails to discriminate. There are a number of facts that seem to preclude the possibility of vitality having anything to do directly with the destruction of the tooth. I have no doubt in my own mind that the vitality of the tooth has to do with retarding decay, by the blocking up of dentinal tubes, by the arresting of the deposit of calcific matter, also by the second dentition acting as a kind of splint on the inner side of the pulp chamber. But there is one great fact that must not be lost sight of, and that is that decay never begins or goes on unless there is some communication between the surface and the cavity. There is no such thing as internal caries. And if the destruction or breaking down of the tooth was due to vital action, it would seem as if there must be some cases in which the tooth would break down without having a communication with the surface. The probability is that the writers who

have undertaken to teach us recently in regard to caries are nearly right: that the breaking down of the tooth is due to abrasion or chemical solution. On the other hand, the life of the tooth is capable of throwing barriers in the way of decay. In that way, it may be said that vitality modifies decay; but it does not cause decay. The action of vitality is just the reverse. When, for instance, one of us drops a drop of hot lead upon the skin, that act destroys a certain part of the tissue. We do not consider that vital action has had anything to do with the destruction of that tissue; but the forces of nature are set at work by reason of this interference, and increased vitality will be made manifest. And I place the part that vitality plays in caries upon that ground. It has nothing to do with the breaking down of the tooth structure; but it does have something to do, in case the nerve is alive, and the tooth in fair health, with the retarding of decay.

I have stated, in a previous paper here, my belief in the true vitality of the enamel; and I think I have made a very strong comparison of the position and condition of the enamel and the epithelium and the epidermis. If the enamel is alive, it is certainly the only point upon the surface of the body, or any of the mucous cavities communicating with the surface, where the superficial layer is alive. And when we consider that there is only three per cent of animal matter in it, the supposition that the enamel is practically without vitality seems to me most likely.

Dr. Robinson: I agree in the main with Dr. Knowles; but necrosis and caries are caused by the negative action of this vital force. I believe that we may produce certain impressions upon the tooth structure, and that nature's response to that impression is, destruction of the tissue upon which the impression is made.

Dr. Dennis: I think it is very difficult to tell where the action of vitality ceases. The more we look into nature by the aid of our modern instrument, the microscope, the more we are amazed at the wonderful beyond, that unexplored region; and the more satisfied we must become that, as long as we live, and as long as the world moves, we never can reach into the mysteries of nature beyond a certain point. We cannot tell to-day where vitality ends or death begins. The most skilled experts tell us they cannot tell where sanity ends and insanity begins; and it is the same with the teeth. You cannot tell where vitality leaves off in the dental structure.

It has been contended for a long time that there is no vitality in the enamel. I believe there is, and that decay comes frequently from a low or imperfect organization; that it is sometimes caused by chemico-electrical action in the mouth. I do not believe a single morsel of food goes into the mouth that does not produce chemico-electrical action. We will see teeth in close proximity in the mouth; disintegration commencing on the enamel; one of the teeth is extracted, and the instant that contact is removed, where the decay is merely superficial or confined to the enamel, we will find that disintegration ceases. I believe that it ceases on account of the loss of contact, or the chemico-electrical action. Not a metal can be put in the mouth with which another metal will not act, positively or negatively to it. And I believe it is the same way with the food. The tooth is made up of the carbonate, phosphate and silicate of lime and organic matter. I believe that through this chemico-electrical action the tooth is broken down; and broken down quicker in those cases where there is a low vitality. And I believe that this great destruction of the tooth is on account of the injudicious use of food. Just in proportion as the vital law is trampled upon by the transgression of organic laws, just so much is hastened this dreadful destruction of teeth by chemical action.

Dr. Hurlbutt: I have been very much interested in the remarks of Dr. Dennis. Some of them in the line of the truths of the new departure; in that there is a chemical change, which is a vital change; which is the principal cause of the decay or caries of the tooth. His illustration was a very apt one. We find decay has progressed between teeth that are in antagonism, or directly connected. By the removal of one of the teeth, we arrest the decay which is perhaps quite deeply seated in the other tooth. We remove the points of contact, and arrest the chemical action, the cause of disintegration. I believe there is more truth in this chemical theory than we have been in the habit of giving it; and when we consider that metals in connection with the acids of the mouth facilitate such action, we have another proof that our metallic fillings, in mouths where the secretions are acid, must necessarily fail. It may be that the disintegration will be slow, but it is very sure. So I only look for perfect success in our manipulation in all mouths, and especially in acid mouths, by the changing of our materials for filling. I don't believe that there is any filling that will resist the chemical action as well

as gutta-percha. Of course, we all know it is not a permanent filling, and never can be made so. But I look forward to the discovery of some metal that shall take its place, with the durability of a good gold filling.

Dr. McCowan: I cannot look upon caries as a vital action from the fact that when the condition of the constitution is lowest, then the caries progresses most rapidly. Our medically-educated dentists treat the general health to arrest caries. My reason teaches me that if it was a vital process, the more vitality we had, the more rapid would be that process. But we find it directly the reverse. In former years, when teeth carved out of ivory were used, they were found to decay in the same relative positions as in the natural teeth. Vitality would surely have nothing to do with decay there.

Dr. Lane: I very often find young men of the best health, most vitality, strength and vigor to have teeth that decay most actively by this destructive or corrosive agent that is undermining tooth structure; and the trouble is not arrested by filling. If the decay is caused by vital action, it acts very differently in different cases, and from apparently different causes.

Dr. Harding: I firmly believe that the loss of tooth structure is generally due to vital action. I think that our habit of crowding the food into the stomach has more to do with the decay of the teeth than the character of the food after it gets into the stomach.

Dr. Brewer: This question of chemical disintegration is one of great mystification. Whenever the microscope and histology will carry us down to the depth of the tooth structure, and give us the different processes carried on within that structure; and whenever it teaches us the assimilative power of the pulp and the pericementum; when it teaches us the relative power within the tooth to resist the action of outward agents, then we may be able better to tell the cause of chemical disintegration. In most of these cases, we have a low condition of the system going with a low condition of the tooth. And the question is what can we do to arrest this action of disintegration when that power is exerted upon it. I believe it is very nearly mechanical. We find cases where the dentine is so solid and so perfect that it will resist the action of acids

for years and years, I had, a short time ago, a wisdom tooth —which I sent to Dr. Chase for his investigation—which resisted the action of decay, while all of the other teeth of the mouth were destroyed by caries. When its cavity was broken away, it was found that no action had taken place, and no caries were present. Dr. Chase stated that it was as near enamel as he ever saw. Now what is the cause of this chemical disintegration; and why do we find it so diversified and varying in its character. In the skulls found upon this coast, of parties who lived upon vegetables alone, as a general thing the teeth are worn away, and no decay is ever present. The question is whether this fact is due to the healthy condition of the system, and the vitality sufficient to resist the action of disintegration; or whether it is a low condition of vitality, low diet, and insufficient assimilative power in the tooth structure to resist the disintegration. I believe it is nothing else than the action of the acid, or mechanical action. In patients of a feeble constitution, we always find the secretions of the mouth more or less acidulous. Litmus paper shows this. I can only account for it by thinking that it is a mechanical action.

Dr. Dennis: I believe that there is no chemical action without electrical action, and *vice versa.* You take a piece of gold or platinum and put it in the strongest nitric acid and there will be no chemical or electrical action. But drop in one drop of hydrochloric acid, and we have both chemical and electrical action. I believe we take nothing in the mouth that does not produce both of these actions. Oxygen will act upon any of the positive elements below, and produce another element, or a result. It produces a change; and while that change is going on there is chemical action, and there is electrical action. And it is this chemical and electrical action combined that does this great amount of destruction; and the greatest amount of destruction is where there are the wrong proportions in the organization of the bones. I do not believe that it is a vital action that destroys anything. I believe that nature struggles to defend and preserve itself I do not believe that nature provides any way to destroy itself. Nature is all of the time defending itself against disease; and that organization which is the most powerful, and in the most perfect unison with nature is the best able to throw off disease.

THE FUTURE STATUS OF DENTISTRY.

BY C. L. GODDARD, D.D.S.

Our generous President little realized the task he imposed upon me in giving me this subject, for the future includes a long period of time. It will be the time of our grandsons and great-grandsons and we can well imagine that their mode of practicing dentistry will be as different from ours as ours from that of our grandfathers and great-grandfathers.

Let us imagine ourselves transferred by some necromancer's art to the time of our great-grandsons, and we shall see what is their practice.

We may suppose that we are in this same city of San Francisco. Let us visit the offices. We look in vain for the now familiar sign of Dentist. We find on a door-plate "J. J. Brown, Oral Surgeon and Physician." We ring the bell and enter a pleasant parlor. The odors of carbolic acid and iodine are wanting. We begin to think we are in the wrong place till a glance in an adjoining room shows us a dental chair improved by the great-grandson of our old friend S. S. White. Our great-grandson approaches but does not recognize us, as his grandfather not yet born. We show him a tooth somewhat decayed and expect an invitation to take a seat in the new chair which we are anxious to examine; but no, he feels our pulse, examines our tongue, enquires if caries is hereditary, asks about our general health and habits, writes a prescription and awaits his fee. We glance at the prescription and find some new preparation of lime with an agreeable tonic, and directions to "take three times a day till a cure is effected." We look up in astonishment and say: "Why! Doctor, we are not sick, we merely want a tooth filled."

"Filled!" says he in equal astonishment, "Where did you come from? We don't fill teeth now. Your system is degenerating. You are wasting faster than you supply new material. The tonic will stimulate the recuperative powers, and this

preparation of lime will be assimilated and carried into the circulation where it is most needed, that is, to the degenerated portion of this tooth. The pulp will renew the action of its youth and again build up the dentine. The tubuli will increase in length, intertubular structure be built up till the old boundaries are reached, when new enamel columns will be formed and the tooth be restored to all its former beauty and usefulness."

"But," we say, "that is all news to us. We thought we knew something about dentistry, but never heard of that."

"Dentistry!" says he, "that word is obsolete. We practice Oral Surgery and Medicine. That was a term of our grandfathers and great-grandfathers."

We have another tooth which has ached a little and ask what he will do with that. He seats us in his chair, examines the tooth, excavates the decay and says the pulp is exposed, and that he will introduce another preparation of lime which is readily taken up by the pulp, the opening into the pulp chamber is quickly bridged over, then by administering the proper remedies internally the cavity is soon filled up and the tooth restored to its former shape.

"But how long has this method of treatment been pursued?"

"The first recorded case was in this very city in the time of my great-grandfather. Here is the advertisement of Madame Delisdenere's tooth powder and a remarkable cure effected by it." We read the well-remembered advertisement circulated in the horse-cars:

MADAME DELISDINERE:—About five months ago I took my daughter to our dentist to have one of her front teeth filled; he told me to wait until it had gone a little longer, then bring her in again and he would fill it. About that time I commenced the use of your truly wonderful Tooth Powder, and worked it into the cavity every day with a stick as you directed on the box, and I am delighted to say that it removed the decay, and new enamel has grown over it. This is no idle tale but a fact. Yours truly,

MRS. TAY.

1228 Washington Street, San Francisco, Cal.

Truly the prophetess was not without honor save in her own time.

"But, here," we say "is a tooth whose pulp is dead. How shall you treat that?"

"That," says he, "is beyond the power of curative medicine. We can only make use of the old fashioned methods, and I will turn you over to my assistant who will fill it."

"What gold do you use? William's Cylinders?" "Gold!" and he begins to stare at us as a threefold Rip Van Winkle. "Again, I say, where did you come from. Even my grandfather gave up the use of gold. The various shaded cements we use are absolutely indestructable, and with them we can restore teeth to their former shape and usefulness. The shade can be closely imitated, though the translucency of the enamel cannot."

We ask him how artificial teeth are inserted, and he says plates are almost unknown, that pivot teeth are sometimes used. "But," says he, "if the root is gone and the process not much absorbed, we insert teeth by cutting out a socket in which the root is inserted. To the patient is prescribed an agent that will excite the bonecells to action and new bone is built up around the root, just as in cases of fracture the provisional splint is formed, except that in this case the splint remains instead of being absorbed. There is no absolute union, but otherwise the process is similar to the building up of the process around the roots of teeth as they grow."

We ask where he can find persons willing to supply teeth for this purpose.

"That is not necessary," he replies. "Porcelain teeth are used, as suggested by Professor Stellwagin in the last century. The experiment did not succeed then because the right nutrient material had not been discovered, to arouse the bone-cells to sufficient renewed activity. We are now experimenting in introducing tooth germs in edentulous jaws with the hope of raising a third set of teeth. It has succeeded with animals and would with human kind if there were a source of supply of tooth germs. Success can only be obtained when we are able by the union of the organic elements to produce tooth germs artificially. There is a grand field of experiment in this direction, and if the first efforts are successful, the time may come when human germs can be produced artificially, and we can have our children made to order."

But let us awake from our dream and see what our real future may be. It depends upon ourselves. Our future will be what we, and our students make it. It will illustrate the theory of the survival of the fittest. But let us not claim too much now.

We have sought recognition as specialists of medicine. Has

this been done justly? I think not. Our profession has been in its infancy. We have been gradually leaving a mechanical and nearing a professional standpoint. The majority have attended no lectures and have had no medical training.

Dentistry has not been a specialty of medicine but it is gradually becoming so. Our colleges are gradually lengthening the courses of instruction and increasing their facility for medical training. Three medical schools have added dental chairs and give a special dental degree. This is a great step toward the goal for which we are striving.

It may be claimed that there is no profession or calling in which medical knowledge would not be beneficial, but we especially need a medical knowledge to do full justice to our patients.

Mere manual dexterity is by no means all we need and the fact is becoming more and more patent to us all.

It is claimed that there are many branches of medical knowledge that we do not need. That may be true in daily practice, but the mere knowledge of them will make us greater men. We cannot tell of what advantage they will be to us till we are masters of them.

What then may we expect as the "Future Status of Dentistry?" We may hope as a profession to have the knowledge that will enable us to treat our cases systemically as well as locally. We may hope to have a knowledge of the disorders of the system and their relation to disorders of the oral cavity. We may not hear of operative and medical dentistry but of oral surgery, which will include all means of treating lesions of the mouth, whether medical, surgical or mechanical. We shall not strive continually for fear our dignity may not be duly respected, but shall worthily walk hand in hand with the general practitioner.

THERAPEUTICAL TREATMENT OF THE DENTAL PULP.

BY A. F. M'LAIN, M.D., D.D.S.

Of the various pathological conditions which may arise in the *teeth*, none are more difficult to combat successfully, and which require a more intimate knowledge of the power of therapeutical agents, than those having their origin in the *dentinal pulp*.

These bodies are subject to irritation from various causes growing out of certain circumstances, as accidents, thermometrical changes in temperature, and from that most common cause, *decay* of the teeth.

The effect of irritation to the pulp, if not met therapeutically at its earlier stage, ultimately leads to congestion and inflammation of that organ, thereby producing its death; and, by the continuance of these pathological states, disease is finally communicated to the peridental membrane.

Now, the irritation, congestion, or inflammation of pulps, caused by mechanical shocks; fractures, abrasion of the dentinal tubuli, changes of temperature or from the rapid progress of decay, permitting chemical action on the pulp tissues, are to be treated by different medicinal means, adapted to the case.

Congestion or *inflammation* having its origin in shocks, fractures or abrasion, is not, according to the writer's experience, amenable to conservative treatment. In such cases, no alternative remaining, the better course is to proceed to devitalize and extirpate, concluding the operation in the usual manner of root and crown filling. The chances, however, for preserving pulps alive in such cases are small; and is successful only when the irritation is of a slight character, and when its origin has been due to gradual exposure, during the progress of which the vital forces have been able, by throwing out lymph, to protect, in a measure, the pulp from the effects

of external agents. On the other hand, when the solution of the tooth substance is rapid, and the pulp becoming suddenly exposed, the amount of irritation which follows, soon brings about that hyperæmic condition, known as congestion, whereby more blood is thrown into the pulp cavity than is natural; and that surplus blood not finding an exit into the general circulation, produces so much pressure as to strangulate and cause the pulp to lose its vitality. The consequences of this last do not stop here, for if not relieved at this stage, decomposition and lignifaction of pulp tissues ensue, causing a development of gases which, together with the decomposed matters, force themselves through the apical foramin, and there coming in contact with the pericemental or peridental membrane, set up anew the phenomena of congestive inflammation, and thus pave the way to the usual concomitants of that pathological condition, viz: alveolar abscesses, necrosis, etc. The application suddenly of cold to the teeth acts in the same manner and with like results. This frequently occurs from contact of ice-cold water, the effect of which first drives the blood inward, in short, inducing an intropulsive movemenent of the hæmal current, but which is soon followed by a reflux action which fills to repletion the neurohæmal sheath, thereby establishing a regular *stasis* with the usual phenomena and consequences of congestion.

A slight congestion of the pulp is, however, sometimes removed by a gentle puncture of the pulp, through a carious opening in order to evacuate the excess of blood; and should this fail, tepid water taken into the mouth or a stimulating wash may succeed in bringing about the desired end; for warmth, it is well known, acts beneficially in congestion by giving force to the arterial current and in that way sweeps the stagnant venous fluids into the general circulation. Resort may be had also to local blood-letting from the vicinity of the affected tooth, which acts very happily at times. A blister on the gum may be tried with propriety; but if immediate relief does not follow these several modes of medication, the vitality of the pulp is pretty sure to succumb, even though the hyperæmic state had not lasted but a few hours. In speaking of local bleeding, the preference should be given to leeching, as by that process the unloading of vessels in the immediate vicinity of those connected with the affected pulp, is accomplished without leaving much irritation behind. When an inflammatory process exists of a moderate degree, and limited merely to the exposed portion of the pulp, the prognosis, as

regards the preservation of its vitality, is more favorable, as the effusion into the pulp cavity is small in quantity, and, the character of the exuded fluids being endowed with powers of organization, the *vis-conservatrix* is often able to limit the evil effects of inflammation; and, even should this effort of nature fail, the pulp organ may still be within curative means. To obtain so desirable an effect, sedative applications should be made directly to the pulp and to the surrounding parts, with the view of lessening the arterial supply, and to allow nature to resume her sway. For this purpose the strong preparation of *aconite*, combined with suitable agents, will frequently act most beneficially. Thus, an irritably inflamed pulp will often be immediately relieved on applying a mixture consisting of equal parts of *Fleming's Tinct.* of *aconite* and chloroform, with one-half their proportion of the aquæous solution of iodine, *(Lugol's weak solution)*, to which may be added fifteen or twenty drops of pure creosote or carbolic acid. It is an error to flood a pulp which is not intended to be devitalized, with creosote or carbolic acid in full strength, as is commonly practised. Although both of these solutions possess anodyne properties, yet, in an undiluted state, they are escharotic, and therefore will prove irritating, and thus aggravate the symptoms. An application or dressing of the preceding formula having been made, the gums may be painted with a solution of equal parts of the strong tinctures of aconite and iodine. A counter-irritant, as well as resolvent action, is thereby obtained. Now, if the pulp is inclined to bleed, this should be encouraged by holding tepid water in the mouth, or by syringing the cavity with it; and when the hemorrhage has ceased the preceding anodyne dressing is then applied, and the cavity sealed with a solution of gum saudarac or mastic varnish on a pledger of cotton lint. Sometimes it happens that the pain continues; especially is this the case when it proceeds from an acid condition of the fluids entering the cavity, or from previous fermentation having taken place in it; then an alkaline dressing of liquor potassæ or sodæ, with a little essence of peppermint or tincture of camphor may afford instant relief. A solution of chloral in camphor, combined with belladonna, or aconite, or carracrol, answers an excellent purpose as a neutralizer. In fact, nearly all the essential oils will sometimes relieve toothache arising from irritated or inflamed pulps.

If by any of the means mentioned, the partial inflammation of a pulp has been subdued, something still remains to be done in order to preserve its vitality. And the benefit, nay, the

absolute necessity which exists for the conservation of the entire vitality of a tooth, as regards its proper nutrition and natural appearance, to say nothing of the gradual deterioration which inevitably befalls a crown when the neuro-hæmal connection of a tooth has been injured or destroyed, is too well understood by you, Mr. President and gentlemen of the Association, to need an elucidation here. Neither is it necessary to enter into a disquisition in regard to peridental trouble, alveolar abscesses, etc., which so often supervene upon the ulceration and the putrifaction of pulps, when such a course has been allowed to take place.

To digress a little. Many writers and lecturers on this subject assume, with a positiveness not to be contradicted, that pulps in almost every state of disease, from inflammation and ulceration up to partial gangrene, can be saved alive by proper medication. Now, this is contrary to the experience of every unbiased observer, for it will be found that, with the utmost care in the management of the case and despite most thorough therapeutical appliances, a pulp that has once been the subject of extended inflammation or in any way in an ulcerated condition, invariably dies sooner or later, causing more or less subsequent disturbance. To resume: As we have intimated, the conservative treatment of a pulp is only half accomplished on arresting the irritation consequent upon exposure. It is essentially necessary to shield it from the contact of air, moisture, and all extraneous exciting matters, else a recurrence of the same conditions would ensue and thus render future efforts at preservation unavailing.

It is now admitted, that pulps, if properly covered or protected, and under favorable circumstances, and in well constituted organs and temperaments, especially in those cases where irritability is slight, or when the pulp has become exposed from the mechanical removal of caries, at least ninety-five per cent. can be saved, with all their vitality. To obtain this result, some non-conducting material, and at the same time which is perfectly congenial to it, must be interposed between the exposed or sentitive pulp and the filling, and so adapted as to prevent pressure upon the pulp, as well as leave no space for the retention of air, or for the accumulation of exudation fluids that might escape from the pulp. To these very causes may be attributed the common failures which formerly attended the capping of pulps, when solid substances, such as gold caps, horn, lead, asbestos, etc., were employed for that purpose. The vacuum thus left, allowed cerum, lymph, blood, or atmospheric

air to accumulate or remain in contact with the pulp, and by that means caused continued irritation, which finally brought about its dissolution. Flooding the cavity with creosote or carbolic acid, and then coating the surface with oxychloride of zinc cement, often fails of its purpose, because the caustic effect of the hydrochloric acid contained therein is apt to irritate, and finally devitalize the pulp, notwithstanding the film of co-aggulated albumen or fibrine that may have been formed through the action of the creosote or carbolic acid upon the exuded polasma, for which they have an affinity.

Now, this protecting layer may be more readily and perfectly formed artifically, by applying collodion to the exposed surface; but better still, by painting it over with a solution of Hill's stopping or gutta-percha, which is obtained by dissolving either one of them in chloroform into a thin paste. In applying it, the cavity is to be well dried, and kept so; but previous to which, it should be bathed with the anodyne mixture previously mentioned; then, with a pointed stick, or fine excavator, armed with cotton lint, spread the solution of Hill's stopping over the exposed pulp or sensitive dentine, care being observed to remove any portion of this coating that might appear on the parieties of the cavity. It may be necessary, according to the extent of the exposure and the thinness of the solution to repeat the application several times in order to obtain a sufficient thickness of body to prevent the penetration to the pulp of the chloride of zinc, which would cause pain. But it will be found by proper management, that in almost every case of exposed pulps, no pain will follow the introduction of oxychloride of zinc. After the introduction of Hill's stopping, sufficient time should be given for the evaporation of the chloroform, and for the film thus formed, to obtain some degree of firmness, before spreading the oxychloride of zinc; and then, when a crust from the latter has become hard enough, a permanent filling may be introduced; or, if the exigences of the case require it, the cavity might be filled up entirely with the oxychloride, to serve as a temporary stopping.

Perfect dryness of surface being an essential pre-requisite for the successful application and cohesion of the Hill's stoping; the rubber dam becomes an all important factor in the process. Furthermore, the permanency of the film thus formed, as well as its non-conducting properties, are greatly enhanced, by adding to the solution a small portion of pulverized silex.

Frequently, in cases of slight pulp exposures, or nearly exposed, particularly if of recent occurrence through accidental

means, and when no previous irritation or inflammation had existed, the oxychloride covering may be dispensed with entirely, on the application of the other. On the other hand, when the double capping has become necessary in consequence of greater exposure, but the conditions of the pulp, being equally as favorable for an operation, scarcely any risk is incurred in the immediate insertion of a permanent filling. It is natural to infer, however, that those cases wherein the pathological states of the pulp are such as to render its future preservation doubtful, prudence would dictate to the operator the propriety of merely inserting a temporary filling, after having properly protected in the manner just indicated, the sensitive or exposed pulp, with the view of awaiting future developments as regards its survival of, or its having succumbed to the morbid impressions to which it has been subjected.

Now, having detailed the mechanical means, and also the therapeutical measures, adaptable for the preservation of the vitality of exposed or irritable dentinal pulps, it will not be inappropriate on this occasion, to say something in reference to the treatment of those pathological conditions which result so frequently from the dissolution by disease of these delicate organs.

They comprise *Alveolar abscesses, Peridentitis*, or otherwise, *Pericementitis, Exodontitis*, including pulp *ossification*, and *Necrosis.*

To appreciate fully the nature of such departures from health in the dental organs, it may be as well for us to examine into their etiology in order that the more rational, and therefore more applicable modes of treatment may be clearly established.

In the first place, any irritant, whether chemical, or mechanical, or vital if applied to sentient parts, produces a disturbance in the circulation of that part. On its first application, a rush of blood takes place; in other words, a determination occurs, the artery is seen to dilate and become distended with sanguinous fluids, but it soon subsides if the irritant be withdrawn. But on continuing the irritation, the veins at and near this point manifest a tendency to become obstructed, the motion of the blood begins to flag, and if not renewed, the circulation in the part ceases entirely. The phenomena just described being the common attendant of congestive hyperæmia, regardless of location, it can be readily apprehended that a precisely similar course follows in the vessels of a pulp; for in this state of hyperæmia, the artery being free to act from the *vis-a-tergo* force of the heart, continues to propel more blood through its chan-

nel into the pulp cavity; and the mechanical impediment naturally offered to its flow into the venous opening, soon fills to repletion the whole bony canal of the tooth, and thus produces so strong a pressure upon the vessels and pulp substance as to lead to the strangulation, and ultimately to the death of this organ.

Now, when that other and more complicated form of hyperæmia—inflammation occurs, though located in the arteries, and arising from the same cause — over-estimation, with the concomitants of over-distension, veinous obstruction, stagnation, varying, however, in their order of progress and phenominal aspects, as just remarked, one being passive, and the other active, and producing somewhat different results when occurring in other textures: yet in the dental organs their pathological sequences are, in the main, nearly identical. The reason is obvious. In a healthy or physiological condition, the artery and vein entering the tooth through a *constringed* apical foramin, and all being enclosed in a common sheath, with the nerve, they gradually expand at the bulbous portion of the pulp; and the blood of the artery, after depositing its plastic nourishment in the crown of a tooth, returns freighted with the waste materials into the vein, in order to be conveyed back into the heart and lungs for subsequent æration and revivification.

The apparent analogy between *Passive* and *Active* hyperæmia, as shown in the dental organs, may be appreciated by instituting an examination into the phenominal action with their dissimilitudes as they occur in the hard and the soft tissues. These, being endowed with expansive powers, the excess of blood propelled into the vessels during the determinative stage, finds a vent through enlarged openings, made so by the over-stretched fibrous network, of which their channel walls are formed, thus affording a partial relief, by the exudation of the serous portions of the blood into the surrounding tissues. But a pulp, being enclosed in a dense, unyielding. bony structure; an irritation induces an afflux of blood into its vessels, which so chokes up the canal, that the excess of sanguinous fluids finding no exit, soon produces obstruction, stagnation, pressure, etc., the characteristic concomitants of congestion, which finally leads to the complete destruction of the *neuro-hæmal* tissues.

Viewed pathologically, congestion and inflammation, as regards their origin and results, their dissimilitude is rendered quite perceptible, as we have already had occasion to notice.

They are both preceded by determination, but have their origin from different locations. *Congestion* begins in the ca-capillaries or veins; whilst *Inflammation* arises from arteries; though one or the other may occur, according to the strength of the irritant, or the length of its duration.

This has been repeatedly demonstrated under the microscope, by applying to the web of a frog's foot, a solution of capacium, when immediately the blood was seen rushing toward the irritated point, the arteries becoming dilated, and the capillaries of the point red, and greatly distended. Here was the determinative stage. On continuing the stimulation, though the arterial current had not ceased, yet its motion became somewhat retarted; the capillary tubes were observed to become more and more distended, with a darker red appearance; whilst the blood-corpuscles lost their disc-like form, and were seen as elongated spheres, worming themselves along, which imparted an oscillatory or vibratory motion to local excess of sanguinous fluids. The inflammatory stage was here displayed in its incipiency. But by increasing the strength of the irritant, or by prolonging its action still further, the veins became completely distended and obstructed, arresting the motion of blood in the capillaries, and giving the part a blue or a purplish color. A fully developed congestion was here shown. Now, what is the usual result of such hyperæmic effusions? The delicate membrane forming the channel walls of those small hair vessels, from their over-distension, they naturally stretch; their fibres separate, and the serous fluids of the blood ooze through into the adjacent textures. These fluids being thus strained, as it were, of most of their organizable properties, and losing still further their vitality by their long retention in the part, they naturally decompose; and in so doing, the textures thus encroached upon, undergo atrophic softening, which prepares the way for formation of abscesses.

The products of congestion, being, as we have shown, aplastic, that is, devoid of the powers of organization, by reason of their source (venous and capillary systems), and from the degenerating process to which they have been subjected, readily accounts for the non-productiou of hypertrophies. And, on the other hand, it is equally apparent why a moderate degree of inflammation is more liable to become organized than the other, the effusions it furnishes, coming, as they do, immediately from the arterial system, is freighted with plastic properties; hence, has a greater tendency to the formation of organized growths. But an inflammatory turgescence may be so strong

as to cause so copious an afflux of blood or lymph to the part, as to produce all the phenomena and sequences yielded by congestion.

Viewed on general principles, the phenominal characteristics peculiar to these two forms of hyperæmia are sufficiently distinctive and well marked as regards their occurrence in the system at large to be readily apprehended, and, it is equally well understood, that one or the other might occur, or follow each other according to the amount of stimulation brought to bear upon the part; but in the Dental Organs, whose dense, inelastic structure and corresponding want of absorptive powers, in case of serous effusions upon the pulp, as generally takes place in the soft textures, naturally communicates in such an abnormal condition of it, features pertaining to both processes, so that the term *Congestive-Inflammation* would not be inaptly applied. Consequently, an irritation of the pulp of much severity commonly assumes this double type; and if not soon removed, ends in the death and subsequent decomposition of the pulp tissues. The products—pus or gas, thus yielded, finding their way through the apical foramin they come in contact with the pericemental membrane, which is in its turn irritated, and thus renews the congestive or inflammatory act, which leads, if not subdued, to the formation of *alveolar abscesses* and eventually to *Necrosis* of roots.

Now, should the inflammatory congestion of a pulp be of a mild or sub-acute character, the foraminal infiltration is apt to be slight, hence, the morbid process becomes limited, to the end of the root, where a portion of the pericemental membrane detaches itself, and assumes a pouch-like form, which, from a wise provision of Nature, serves as a barrier to the extension of the irritation. Frequently, the *vis-conservatrix* forces, in thus limiting the morbid process, by the formation of a receptacle for these acrid matters, gives vent to them by means of a fistulous opening in the vicinity of the root affected. Relief is thus afforded for a time, but ultimately the pericemental membrane loses its vitality, and then *Necrosis* of the root or roots necessarily supervenes, with a probable similar implication of the alveolar processes, if these be allowed to remain.

It sometimes happens an inflammation of a pulp is of so simple and mild a character that only a moderate amount of exudation takes place, and which being rich in plastic materials, a deposition of secondary dentine occurs in the pulp chamber, or if the irritation extended to the peridental membrane,

the ossific deposit is made on the root or roots, which is then termed *Ex odontasis.*

In treating the consequences of dead pulps, the therapeutical indications are obviously to remove them where it is possible before their decomposition has commenced. If, in the inflammatory stage it should be subdued by the introduction of anodynes and sedatives. These consist of aconite, chloform, creosote, or carbolic acid, morphia, etc. When the inflammation has reached the pericemeutal membrane, an application to the gum of equal parts of the tincture of aconite and iodine will sometimes suffice to remove the difficulty. Should this fail, resort may be had with excellent effect to blistering, which is done by means of cantharidal collodion, or with strong aqua ammonia. But when the hyperæmia has assumed the congestive form then leeching the gums will prove serviceable. This mode of abstracting blood should be adopted after the establishment of the congestive stage, as an encouragement to the afflux of blood to the part already too great, during the determination or in the initiatory steps of inflammation, would be given and thus aggravate the evil. It is, however, well to remark that the existence of such hyperæmic state several hours consecutively it may be concluded with certainty that the inflammation has passed into congestion, for the reason already given in reference to the complications so apt to occur in hyperæmic conditions of the pulp or teeth.

Warmth and stimulants, within proper bounds, be it understood, are most valuable therapeutical agents for the treatment of congestion. They act by expanding the arterial trunks, thus giving an impetus to the stagnant fluids which sweep them back into the general circulation. On the other hand, cold applications, frequently renewed, often prove beneficial, as by their constringing effect on the vessels a determination of blood is moderated, thus allowing the circulation in the part to regain its equilibrium, by which means a resolution is promoted, or an incipient inflammation prevented. Heat and cold are therefore merely relative terms. They are both sedative as well as stimulant, but inversely, according to the manner in which they are employed. To gain, for instance, a sedative effect from cold, its application must be persistently continued, and this is obtained by frequent repetition, else the blood that has been repelled at first, by the contraction of vessels which it causes, soon surges back, hence, instead of acting as a sedative it becomes a stimulant, thus increasing the hyperæmic difficulty. It is therefore very evident that cold can

be made either stimulating through its intensity and transitory application, or sedative by a persistent, non-intermitting course.

Should the inflammatory congestion have reached such a point, as to threaten a termination into alveolar abscesses, the abstraction of blood becomes an immediate necessity. Leeching is preferable to scarification, as the lancet does not deplete sufficiently, besides increases the irritation through the wound it makes. On the formation of an abscess, however, a free incision should be made into it, in order to relieve the distension and consequent pressure caused by the exudation that has taken place in the parts. At the same time, the pulp chamber and root canals require to be thoroughly cleared of all decomposed or decomposable matters, such as portions of the pulp, blood, pus or any other irritating foreign substances that may be therein. After this the cavity should be well syringed out with tepid water and a dressing of chloroform, aconite, iodine, (aqueous solution,) and carbolic acid or creosote, introduced on a lock of cotton placed loosely in the pulp chamber. This is particularly necessary if pain exists, as by sealing the cavity the secretions and gases that might form in the tooth would find no escape and in that way increase the pressure and consequently also the pain. Otherwise some covering may be placed over the application with the view of preventing the remedies from being too much diluted or washed out by the secretions of the mouth. These dressings should be changed at first daily, then every other day, and finally once a week, until all abnormal symptoms have disappeared. An obstinate abscess may require from ten days to two months or more to be effectually subdued.

Should a serous opening exist in the gum, near the root of the affected tooth, the preparatory treatment need not continue more than a few days, long enough however for the cleansing of all extraneous matters from the pulp chamber and root canals, and otherwise disinfect them, when a permanent filling could be introduced with little danger as to consequences, as the vent is thus afforded for the escape of gas or pus, which perchance might be generated in the tooth, thus preventing the evil sequelæ so apt to result from pent-up secretions. The remedies used in treating alveolar abscesses may be a little more concentrated than those employed in inflamed or irritable pulps, but it is not inappropriate in this place to reiterate that the application in any case of creosote or carbolic acid in full strength should be deprecated, especially

as is practised by many, of forcing it through the apical foramin. The escharotic nature of either of these agents cannot act otherwise than to excoriate the already diseased peridental membrane. Sometimes the introduction of carvacrol, in connection with those anodyne or sedative articles already named will act very efficiently in causing a cessation in the discharge from an abscessed tooth. Occasionally much good is derived from varying the remedies, by substituting tincture belladonna, essence of peppermint, or tincture of camphor in the place of carbolic acid, creosote, etc. Again, camphor, chloral or salicylic acid may be tried, although the last has never proven very satisfactory in the hands of the author of this paper.

When the discharge is persistent, failing to respond to the preceding modes of medication, diluted aromatic sulphuric acid, introduced on a probe armed with cotton lint through the carious opening acts very efficiently at times. The same agent may be applied also at the apex of the root by means of a perforation made through the gum and alveolar process. Here it is that Farrar's alveolar-abscess syringe is applicable. Chloride of zinc can be used in the same way, and by injection through the pulp cavity, for indolent abscesses, with the view of breaking up the pyogenic membrane lining the sac of the abscess, and also as a stimulant for the promotion of a healthful action in the part.

Nitrate of silver would perhaps prove equally serviceable, were it not for the objectionable and inevitable coloration of the tooth it produces when so employed. Surgeons, it is well known, frequently cure most intracticable caries of bones with this agent. At all events, nitrate of silver, as well as sulphuric acid or chloride of zinc, may be employed in the treatment of alveolar abscesses, without the danger of coloring a tooth, if it be introduced hyperdermically, or through a fistulous opening. Again, an abscess which does not respond to treatment by frequent dressings, is sometimes thoroughly healed by applying *the* appropriate remedies to the pulp cavity, and afterward inserting a temporary filling, which may be left in for some length of time for the purpose of permitting the recuperative forces to have full play. When, at length, a cure is thought to be effected, and if on opening the cavity, no odor or any secretions appear, a permanent filling may be made without apprehending any evil result therefrom.

The remedial measures to be employed in a fully established *exodontasis* is *nil* as regards a cure, further than the extraction of the affected tooth. Prevention, if possible, would seem to

be the only rational mode of procedure in the early symptoms of the disease. And as this pathological state arises from a sub-acute form of peridental inflammation, or sometimes from a rheumatic predisposition to peridental irritation, which excites hypertrophic action, prompt antiphlogistic measures, such as leeching, blistering and the application to the gum of discutients, might perhaps avert the occurrence of this malady.

Ossification of pulps, when suspected, and having an origin through irritation caused by dental decay, their extirpation, preceding the proper operation of filling, is about the best and surest remedy in such cases. For *necrosis*, of course, the roots having lost their vitality and thus become foreign bodies, the extraction of teeth thus affected is obviously a prime necessity.

Dr. Dutch: I would differ with the gentleman in the treatment of some of these cases referred to in the essay. In my practice I have used carbolic acid, creosote, and such things as these, very effectually in the treatment of abscesses; but not with a hypodermic syringe. I understood him to say he applies it externally. I pump it through the tooth. The essay itself covers the ground so perfectly that there is hardly any ground for discussion. The point I have referred to is the only one in which I differ with him.

Dr. Lane: What about the strength of the solution?

Dr. Dutch: I use it as strong as I can get it. I sometimes use Atkinson's "Black Jacket."

Dr. Harding: In regard to the use of aconite. For quite a number of years I used aconite in the form of tincture. The alcoholic solution proved in my hands an irritant to the pulp; and I have of late years used the fluid extract, and have in some instances even allowed that to evaporate to increase its strength. I find that it has a more soothing and beneficial effect.

In regard to carbolic acid: I am now using it so strong that I frequently have to heat the chrystals to get the liquid. I sent East to Dr. Squibbs, so that I could get the very strongest. In this way I get the escharotic effect; and sometimes it is the easiest way in which you can build over the pulp cavity. I find the very best effects resulting from it.

In regard to the formation of gasses in the pulp cavities after capping: A remedy may be provided by introducing a

coil of silk, and letting the end of the silk project through the os-artificial filling, and instructing the patient that upon feeling internal pressure he should gradually withdraw a portion of the silk, and remove the pressure in that way. I have treated a number of teeth in that way.

Dr. Dutch: Do you leave the place open where you pull the silk out?

Dr. Harding: No, sir. I introduce a coil of silk; and whenever inconvenience is felt, the patient complains, and I withdraw a portion of this silk. If I should withdraw it all it would allow the liquids of the mouth to enter. This is the temporary treatment, lasting from three to ten days. When this filling is removed, we find a healthy condition of the pulp tissue. By withdrawing the silk gradually in this way, I simply provide an opening for the gas to have exit.

Dr. McLain: In regard to the hypodemic injection of carbolic acid, I suggested it as a last resort; but my most common practice is to inject it through the carious openings. The proper way to reach the pyrogenic membrane is through the natural opening in the teeth.

Dr. Brewer: I do not believe we can succeed in our treatment of the nerve without a great deal of conservatism. The fact is, we cauterize too much; use too much carbolic acid. When it is placed in its full strength upon the nerve proper, I believe that the osteo plastis function is destroyed or arrested. We generally apply our carbolic acid in its full strength. When I go into a man's office and smell that creosote, I wonder if some poor nerve has not been destroyed, as a general rule. We must be more eclectic in this treatment. I believe that if we will extend our experiments further, that we will succeed to a greater extent. Thirty years ago, according to the record, five out of six nerves were preserved. 1 believe that where chloride of zinc is placed in direct connection with the nerve, it will destroy it. If it don't do it immediately, it will certainly do it eventually. That is my experience.

Then again, I believe that we cap when there is inflammation present. We do not give the nerve time enough to recuperate itself. I speak now of cases of natural exposure. In accidental exposure, we have a good deal to contend with; because in the application of our instrument we often carry spiculæ of bone into the very body; and we are not aware of

it; and then we immediately cap upon that, or as soon as we can stop the blood; and we shut that spiculæ of bone in there, and that foreign substance eventually, and in the natural order of elimination of foreign substances is bathed in pus and must find an exit. When we better understand the pathology of the nerves, and when we are more conservative in our treatment, I believe that we will save more nerves.

I think that we on this coast should have better success in this particular than dentists in the East, as we do not have the same thermal influences acting upon the tooth. With teeth in low and feeble constitutions we must use more care. I have had a good deal of success with my cases on this coast, and I almost invariably use the liquid phosphate of lime. I feed to the nerve that which it asks for. I have been partially successful with cases which were in the primary stages of suppuration.

Dr. Robinson: I don't know much about the treatment of pulps, and I am inclined to judge others by myself. I have studied it carefully for twenty years, and I can hardly see that we have made any improvement. The statistics of long ago, show just as great a saving, and just as much success in filling devitalized teeth, and in preventing alveolar abscesses, as we have now. I am satisfied that there are some constitutions in which the teeth cannot be saved. I find that many dentists discriminate in selecting their cases, as to whether or not there is a tendency to abscess. If there is, there is but little chance of saving it. I find others again, that, no matter what the condition of the tooth may be, they will fill it anyway. I hear dentists say they never find cases of alveolar abscess that they cannot cure. I would get down on my knees for information which would enable me to do that! And scientific information can always be imparted. Mere whims cannot be. I believe that as good treatment as we have of alveolar abscesses, is to clean them out thoroughly; to use a very little glycerine and tannic acid, and in most cases they get well. If they would get well under that treatment, my impression is that this escharotic treatment will seldom cure them. I have succeeded about as well using mild lotions as I have with the "black jacket" and the escharotics, and perhaps a little better. I have seen the nerve destroyed by a pledget of cotton soaked in creosote put into the tooth. So I don't do that. I am satisfied that where the constitutional tendency is in the right direction, almost any intelligent treatment will

succeed with a dvitalized tooth, and where it is strong in the opposite direction, all treatment fails.

Dr. Lane: I have very frequently found that it was necessary to cut down through the alveolar process upon the point of the root where an abscess was formed, and to fully destroy the sack before a cure could be effected. Some cases I have radically cured in that way when I could not in any other. Very frequently there is partial absorption and roughness of the root that will never admit of healthy action. From that very cause we have failures. These cases never will get well, of course, under any treatment, whether potent or mild. I find it necessary very often to use the very strongest applications to destroy that sack and get up a better action, where mild applications were ineffectual.

Dr. Robinson: I have very grave doubts whether any escharotic will destroy that secreting sack. I think a tooth may exist in a tolerably healthy condition with that on there. I think I have succeeded in saving teeth by boring through the alveolar process and scraping them off with an excavator. Those were exceptional cases of course—front teeth. But I am not absolutely certain that we ever destroy that sack when it is once fomed, though I think we may modify its action.

Dr. Lane: Can't you tear it out?

Dr. Robinson: I think not, unless you do it by mechanical means. Then you cut through the process. I am not certain that the sack, being in a diseased condition, justifies extraction. I have seen exostosis in comparatively healthy teeth, and think it may occur without detriment. I think it is only in exceptional cases that exostosis makes extraction necessary.

Dr. Halsey: In my treatment of exposed pulps, my experience has been very much like that of Drs. Dutch and Harding, so far as the use of carbolic acid is concerned. The better the article, the more success. I usually coat the exposed pulp with a solution of gutta-percha, then cap and fill in the usual manner. I have been more successful with this treatment in the last five years than with any other that I have ever adopted.

Dr. Sichel: I have noticed for some years, among the

valuable advances made in the practice of medicine and surgery, the very successful use of the actual cautery in certain cases, and I believe that it may be successfully used in cases of exposed pulp, where all other methods of treatment fail. After the use of it, I think we should try to produce ossification of the pulp by carbolic acid or camphor; and I think it can be accomplished by these agents, as we know that carbolic acid is used for preserving bodies for years and years. We have a pulp, then, that we want to keep alive, and if we use camphor, carbolic acid, and phosphoric acid I think we can accomplish a good effect. I believe we can get an ossification of the pulp.

Dr. Robinson: Are you in the habit of using the actual cautery.

Dr. Sichel: I have used it with a needle. I have not the instruments used for that purpose. I used the needle with success twenty-five years ago. The instrument costs $100 or so.

Dr. Robinson: If actual experience proves that the actual cautery is the best treatment, of course I will use it, but I want to be very certain about it before I will ever tell anybody to open their mouth and let me apply it to a sensitive pulp. I have also heard a good deal about the use of leeching the gums, but I never had the courage to put a slimy worm into a woman's mouth.

Dr. Sichel: If the iron was only at a red heat it would give great pain; but when it is at a white heat, as it should always be, it is not very painful, as it perfectly destroys the surface of the nerve where it touches, making the transmission of sensation impossible.

Dr. McLain: There is nothing more beneficial than the actual cautery, in proper cases. The galvanic cautery, to be effective, must be brought to a white heat; it then produces immediate death of the tissue. I cannot see how you can preserve the vitality of the pulp after the use of the actual cautery, for it kills in an instant. With a view to protecting the pulp, I think the actual cautery should never be touched to it. I have seen the ill effects of applications of the iron at a red heat only.

DR. HARDING: I see no objections to the escharotics, but I cannot believe in the usefulness of the actual cautery, as I have heard of its ill effects when used in England and Germany by the common people, who would neither have their teeth filled or pulled. I am satisfied there is a vast difference between applying it at a red heat and at a white heat.

DR. ROBINSON: Take ten given teeth with alveolar abscesses, and fistulous openings. We wash those out thoroughly and simply apply some antiseptic and disinfectant; not an escharotic; and how many of those will get well? Then take another ten cases and apply the strongest escharotics, forced in until they come through the fistulous openings; and how many more will be cured by that process than the former? My experience teaches me that the results will be just about the same.

DR. LANE: You will cure nine out of ten.

DR. ROBINSON: Do you do that?

DR. LANE: Yes, sir.

DR. ROBINSON: I use the same materials; and as thoroughly and carefully as I can; and I cannot do it; and never have succeeded in doing it. I find some cases that cannot be cured, and some that get well. I make it a rule to undertake all. I would like to see a strict record kept for the next year of the treatment and results of such cases. I believe it would give us some valuable information.

DR. LANE: Sometimes the appearances of the patient will indicate whether we ought to undertake to cure one of these cases, or not. The patients condition may be such as to warrant us in applying forceps at once, I think. Then, again, the locality of the tooth and the nature of the lesion. It may be far back in the mouth, and a lower molar, when we cannot reasonably expect success. Consequently in these cases, and where there is a low constitutional diathesis, we do not undertake to save the tooth in this way. But I think where there is a reasonable prospect of success, and we undertake to cure them, we do cure nine out of ten.

DR. DUTCH: I think that Dr. Lane does what most others

do who are successful in the treatment of these abscesses; that is, after a thorough and careful examination, judge for themselves whether there is a probability that it can be cured; instead of treating it for months and then discovering that it cannot be cured.

Dr. Robinson says he would like to have the secret of that success imparted to him. I have discovered that while one man will be successful in the treatment of a case, another will not, because he has not that manipulative skill, and it may be that it cannot be imparted to him at all.

Dr. Robinson: I suppose that it was the particular effect of the medicinal agents that cured; and not the operator.

Dr. Dutch: It is in the thoroughness of the application.

EXPOSED NERVES.

BY F. A. BREWER, D.D.S.

Mr. President and Gentlemen of the Association:—I apprehend that no subject exists within our field of investigation more deserving or more worthy our attention than that tending to the conservation of the dental pulp. When claiming rank of peerage with the general physician, let us ever bear well in mind that the merit and stability of our usefulness depends altogether upon the *extent* of our accomplishments in that field of demand, tending to the restoration of the human superstructure in its entire originality if possible.

Refinement of culture upon the part of our public has so prominently improved that we find an odium of censure cast upon the head of that surgeon, who may fail to sustain a valid plea in the event of undue contraction of a disjointed or fractured limb, upon which he may have operated; but even the more increased, presumed unjustified amputation. Thus we cannot long indulge an idle fancy, nor insist upon indiscriminate devitalization of the tooth pulp upon the mere pretext that it is not essential to the integrity of tooth structure. Nor can we justify ourselves upon the ground of the impractibility of its conservation, owing to the fact that five out of the ten experimented upon die.

And, gentlemen, unless we become more determined and persistent, yea, *enthusiastic* in our appreciation of its restoration, not only the general surgeon but the public, also, will question our prestige in the field of our professional science. Thence, it behooves us to the employment of increased *energy*, as also a persistent and *patient* research of the mystification with which this delicate object of charity is influenced when diseased or disturbed, not only in cases of accidental, and that of decay; but, also, our efforts should none the less decline even in partial loss of its "odontoblastic function." What we

most devoutly pray for is that speedy era in microscopial science describing the line of demarkation justifying our line of conduct in its restoration or devitalization. And we would beg leave to suggest to our genial students in microscopy that they limit somewhat their researches within the inorganic field, and turn their more diligent attention to this (most delicate) of all tisues.

If they will but apply their observations and investigations as closely in this direction as they have in the various ramifications of tooth bone and enamel analysis; if they will but discover the depth, breadth and extent of assimilative power of the formative cells of repair in its various classifications, the extent of its coincidence of sympathetic influence under the different diathesis of temperaments; also, further, if they will discover the defined limits of a possibility commensurate with the integrity of its osseous functions, they will not only settle a much vexed question at issue, but outstrip a Hunter, a Bell, and a Nasmyth, and also challenge the world as Microscopic Histologists.

In presenting this subject of Nerve Exposure I profess nothing new at all, but merely hope by its agitation to encourage increased efforts of experiment upon the part of each one of us, in order thereby if possible to lead to the discovery of an established line of procedure increasing our further success.

Here upon the Pacific Coast we find a far superior inducement to the encouragement of "nerve preservation," or at least that of experimentation through its lessened humidity of atmospheric variation, thus far excelling our chances of assured success over the same in the East, and knowing this I have felt more especially inclined to extend the field of venture, by including cases of primary suppuration. I have three cases under my observation which I have treated and refilled one over two years since, one eighteen months, and the other twelve months. The nerve of the two former cases was found bare for nearly one-eight inch square surface, and the third about one-sixteenth exposure; the first and second had been already filled for over six months, partially so with oxychloride, placing the same in direct contact with the nerve surface. A very fatal policy I assure you, gentlemen, if based upon my sad experience, for a criterion. If it does not immediately devitalize, it most certainly induces consequent congestion.

A diagnosis of two of the three cases named, revealed a spongy and puffed indication, with an overlapping of its pery-

phery upon the orificial limits of the bone flooring; the edges of the same being rough and jagged, of course kept up an irritantcy sufficient to induce constant suppuration. An astringent was employed of tanin in glycerine for two days, by which sufficient shrinkage was gained to allow the use of a fine "burr" drill in smoothing the mouth of its chamber. Afterwards a dressing of iodine in glycerine was indulged; no signs of suppuration were apparent, when the organ was closed over with lacto phosphate of lime, followed by a metallic cap, the inverted portion of which was filled with a thick solution of sandarac. A coating of colodion, upon the flooring and sides of the walls of the cavity, was indulged with an increased quantity, surrounding the edge of the cap, in order to seal any vacuum occurring there; and the cavity filled with oxychloride, followed by amalgam. Two weeks since these two cases came under my observation. No pain having occurred worthy of attention, and presenting the color of the teeth unchanged; with no abscess or indications of even a cicatrix present. A simple cavity having located at the mesial line of the tooth of the most important of the two cases, the same was filled with gold, and indications of sensation during the operation were sufficient to justify a belief that the organ still survived.

The third case, though more simple in character, was suppurating also, and was treated somewhat similar, with the exception that the metallic cap being lined with egg-membrane and its inverted surface filled with shellac, and the albumen of the egg applied to the organ. The mastics were indulged to carry out a two-fold purpose. That of exclusion of air when placing in position, and also the better yielding to any demand that might be made by the organ in case of elongation induced (before quietude), by any foreign disturbance, or undue physical vibration or nervous excitement. I think the tardiness of the absorption of the alcohol in the shellac, forms a superior advantage over that of the chloroform, owing to the rapid evaporation of the latter; an unyielding surface of compression is the sooner formed, eventuating perhaps in strangulation.

Thus, gentlemen, although I deem the result of these three cases, perhaps, but of short duration myself, and whether or not you will allow even a bare thought of a possibility of restoration by calcified secretion, yet I think you must certainly justify at least a *trial* rather than immediate devitalization, more especially where the diathesis habits and physical normality are found present. Where our patient manifests undue nervousness, or even otherwise, our treatment should,

for the first twenty-four hours, be palliative, and close scrutinizing of the circumscribed limits of the edge of its chamber, relative to any sharp or knife-edge surface being present, *if found,* then Nature should be assisted by smoothing, or pulpitis will most assuredly follow. I refer to all cases of natural exposure, and in fact the same holds good in that of accidental. But, gentlemen, if we accord the fact of the phenomena of hasty enlargement and tardy diminution of the other tissue, in case of solution of continuity, and granting the same to that of nerve tissue, when plunging our instrument in its bowels, or in laceration by our burr, do we exhibit true prudence by an immediate closing? Would it not be wiser to reduce its volume previously? And again let us not forget that in the plunge of our excavator a spicules of bone may have been carried there, or some other foreign intruder, to be thrown out by a slow, festering, natural process; or even the chips from our burr being thrust deep within the neck of the chamber and far from the reach of our cleansing process, and there left to irritate the outer garments of its folds, and induce subsequent ulceration. Thence let us be more conservative in our experiments and more methodical. I feel perfectly confirmed in my belief that such escharotics as chloride of zinc, creosote and carbolic acid, in full strength, if not fatal in the results, certainly retards rather than hastens progress. If they are at all indulged, a very weak solution should be employed, soothed by the addition of glycerine or some other emolument. I feel much encouraged in the use of lacto phosphate of lime. In one case of accidental exposure, in which this article was used, I found an unyielding surface, two months following, over the orifice, but rather incline to the belief that it was merely the deposition of the phosphate rather than true calcification. In a patient of febrile diathesis, I should encourage also its use constitutionally. In cases of capping in lymphatic patients, due care should be observed to absorb undue quantities of lymph accumulation; our sporgoid absorbents prove very advantageous.

In the application of our caps, no rough or uneven surface, or sharp edges, nor no dirt or dust, should be found upon them. A lining of egg-membrane, covered with albumen, may be used to advantage in any case. In applying our caps, it were safer to slide them from one side over and upon the nerve, in order to prevent undue irritation to the organ by hydraulic pressure. A valid reason, I believe, for our many failures. As I have lately suffered by displacements in two cases, let us well observe the

morale, to hold tight to our caps, when laying the floor of our filling; and I would suggest that an application of shellac be employed in sealing up the edges of our cap, in order to prevent the egress of plasma, thereby insinuating itself under our flooring and subsequently inducing mephitic gasses. I am in the habit of filling a majority of my cases of natural, as well as some accidental, temporarily with plastics, unless exceedingly favorable, before attempting otherwise, for I cannot satisfy myself that the vibration from the mallet, or even angular strain from hand-pressure, necessary in a gold filling, does not induce an abnormal quantity of plasmatic exudation to the nerve organ. If the plea of firmness is offered in the use of the wedge, I claim that the vibration there is none the less favorable. And thus, in the superior teeth, more care should be observed, for absorbents may not dispose of the extra quantity before mischief occurs.

Thence let us, gentlemen, be more conservative in the future in this specialty, and also let us rest unsatisfied in our field of accidental cases, and not content until we shall have mastered those of the more complicated type also. And, finally, let me jog the memory of each one of us: when about to apply the vital poison to our poor *unfortunate,* because of the claim of its non-essentiality in the welfare of its surrounding, that we at least accord to it the life work, not only as to the retention of its beauty of color, of the dentinal structure, nor its continued labor of the condensation of its cancellated tubular tissue, but its love and ardent affection for the continued welfare of its surrounding children by its own voluntary ossification.

Thence, gentlemen, when we are about to plunge the fatal dagger, let us stop and reflect for a moment, and think not that we *are* right, but ask ourselves, *are we* right?

DR. MCLAIN: I thank the author of this paper for coming to my assistance, and expressing to the Association the idea that I have tried to impart, which is: the importance of preventing exudations from pressing upon the pulp substance. When the pulp has been wounded and is inflamed, there is always more or less lymph and plasma exuding from its wounded surface, even though creosote has been applied. The effect of creosote is merely to unite with the albumen to form a little film, which protects this organ from the effects of the air. The author of this paper recommends the use of the albumen of an egg. I have no particular liking for Hill's stopping, or

gutta-percha, as a protection for the pulp; and this albumen acts in a similar manner. It contains more or less pulverized silex, which gives consistency to this delicate film. In this way you avoid the hydrostatic pressure which would naturally result from filling the cavity with a fluid. I presume this albumen would have exactly the effect desired. The albumen also prevents the entrance of air, which I think is a great irritant to any nervous tissue.

The wounding of a delicate pulp with creosote or carbolic acid in its full strength, is, I think, very detrimental. Only a few days ago a little girl came to me with her face badly blistered, where a little creosote had accidentally dropped upon it. If it will effect the epidermis to this extent, what must be its effect upon a delicate tissue like the lining membrane of the socket or pulp of the tooth? It must be destructive. It must literally cook and dry up the nerve. I am firmly of the impression that using these articles in an unadulterated form is an injury to the tooth structure, especially in the teeth of young persons.

Dr. Harding: There is a vast difference between the action of escharotics upon the pulp, and upon other membranes, and there can be no relation between the symptoms or results of an application of a chemical agent upon one part of the system and another. Acetic acid of its full strength is frequently put into the oval cavity with impunity; coming in contact with the delicate membranes of the ear, and having its effect in the eustachian tube. Yet simply the vapor of acetic acid is offensive and irritating to the nasal cavity; and it has a very serious effect if applied to the membranes of the throat. And sometimes acetic acid is used in treating diseases of the ear, by reducing it to half its commercial strength, and heating to 190 degrees. I have myself applied it at that heat.

In regard to the capping of exposed pulps, I will give you some of my experience. Sometimes we will find sufficient moisture in connection with such a pulp, to carry out the experiment; at other times I employ water in small quantities, in order to satisfy myself. Taking either Weston's non-irritant cement or of plaster of Paris powder, blown into the cavity with an air syringe, it adheres to the moist part. Since I have commenced the use of Weston's cement, I have used it almost entirely in that way. Sometimes it is of great advantage to use it with one of the platinum caps. But if you are going to remove it, and do not wish to create a vacuum, then it can be

blown upon the pulp in this way, and it is there without any hydraulic pressure. I sometimes find good effects resulting from that application. Sometimes we find cavities that are difficult of access, and in such cases you could not possibly lean the cap so as to slide it over any proximal decay in superior bicuspid teeth.

Dr. Knowles: I am very much pleased with the paper just read, and I think it contains a great deal of valuable information. There is no doubt that there is liable to be some trouble from the increase of pressure after capping always. I am in the habit of providing for that in another way, and that is by counter irritation. The pressure is reduced in that way. I use ammonia to produce the counter irritation. I don't know that I have any better success than other dentists in capping nerves; but if the nerve is freshly exposed, or if, for other reasons, it is regarded a favorable case for capping, I have very little difficulty in doing it; and I think I have a very small proportion of teeth die after capping. I attribute this in a great measure to the action of the counter irritant. I don't wait for trouble; but when I cap, it is my custom to counter irritate well, both inside and out, if I am at all suspicious. And I think the absence of trouble is due in a great measure to that.

In capping, I proceed a little differently from the way stated in the paper. I may often use nothing but a piece of adhesive plaster; or, in fact, anything that is non-irritant. I don't think it a good plan to soak the tooth in any escharotic. I think it is bad theory and practice. In order to avoid pain, I dust a little powdered oxide of zinc on the floor of the cavity. This answers the purpose in two ways; it renders harmless the excess of chloride of zinc, if there is any, by entering into combination with it, forming a non-irritating layer between the filling proper, and the sensitive part of the tooth. The mixing of the creosote or carbolic acid with the oxide-of-zinc, to my mind, is entirely unnecessary. We have something that we use as a part of the filling that enters chemically into combination with the oxide of zinc; and in case we should by accident get a large excess, it is usually attended to in that way, and disposed of, so that it does no damage.

Dr. Kingsbury: Please give us your method of counter irritation.

Dr. Knowles: I dry the gum thoroughly, so that the

ammonia will not run in it; and, raising the lip so that there is no danger of getting the ammonia where it is not wanted, after putting a little cotton upon the end of a probe, I dip it into the strongest water of ammonia, and rub it upon the part until the blood comes freely. This will usually take not more than a quarter of a minute; and where there are any symptoms of congestion at all, or pain caused by pressure, the relief is sometimes almost instantaneous. It is almost like breaking an abscess. The absence of pressure is noted instantly. It is not usually necessary to repeat this inside of three days, if at all. It makes quite a little wound, something like a superficial ulcer; but it usually heals without trouble or treatment. In fact, I am in no hurry to have it heal up, as I think it is of advantage to have it remain a sore for a few days. That is simply a counter-irritant; but in my hands the strong water of ammonia has proved more active and efficient than when scarification, aconite, iodine and such preparations are used; but they are all different means for accomplishing the same purpose. I do not believe that the ammonia has any specific virtue other than that it acts more promptly than anything I know of.

Dr. Lane: I have been using aconite and iodine with the happiest results for a good many years. The aconite and iodine preparation that I use gives immediate relief, just as Dr. Knowles states that the strong water of ammonia does. On its application, my patients generally say: "There, that feels easier, now."

In the matter of capping nerves. I have never used the caps spoken of, though I have no doubt they are very valuable. But I cannot conceive of their being of general application, there are so many places where, it seems to me, we cannot use them successfully. In order to avoid the irritation which may be caused by the chloride of zinc, I always mix a portion of the white oxide with carbolic acid. For five years of a rather extensive practice, I have treated teeth in this way; and I know of but two or three cases where it has been necessary to destroy the nerve, or extract the tooth. I generally use the carbolic acid which has been so severely denounced. I have had very happy results from its employment.

Dr. Knowles: In making your application of aconite and iodine, do you succeed in drawing blood?

DR. LANE: No, sir.

DR. KNOWLES: That is the very reason that I preferred the strong preparation of ammonia. The theory of the benefit of counter-irritation is that its action is rapid. It must be prompt and sudden, and the more sudden it is, the greater the momentary flow of blood is towards the part, and a corresponding depletion of the neighboring part. So I have preferred the application which acts most rapidly. It is interesting to watch the enlargement of the capillaries while ammonia is being applied. You, of course, cannot see the capillaries enlarge; but you can see that the redness increases distinctly at some little distance from the point of application. The action is very, very prompt. I know of nothing that I have ever used that will cause the blood to collect about the point at which the application is made so quickly. I have succeeded in reducing the trouble after the tooth had been pronounced undoubtedly dead by another dentist, where there was no sensitiveness to cold, and the nerve was in a state of almost profound congestion; and, following the application of ammonia, the sensitiveness returned.

DR. MCLAIN: I have had the happiest effects from the use of strong ammonia on the gum. In cases where the peridental inflammation is not severe, the aconite and iodine act as well. I presume that the counter-irritation following the use of the aconite and particularly is, withdrawing blood from the pulp, and bringing it to the surface. But it does not deplete as rapidly as ammonia. Ammonia depletes most thoroughly and instantly.

I apply my ammonia in this way: I put a stopping of lint into the mouth of a small vial loosely, and saturate it, letting it protrude a little beyond the surface of the mouth of the vial; and then, when I apply it, it is pressed within, so that the edge of the mouth of the vial will touch the tissue, and prevent its excoriating the parts around. The ammonia does not spread out on the cheek or tissues above, and it is a very safe way of applying it.

DR. ROBINSON: I accept these gentlemen's facts; but I am a little doubtful of their theories in relation to the matter. It is very strange to me that drawing a few drops of blood from the margin of the gum will deplete the pulp. The connection between the parts by the capillary system is a very long one.

The artery and vein that supplies the dental pulp are in the centre of the alveolus; and there does not seem to be any capillary connection between it and the tissues to which are applied the counter-irritant. I believe the effect produced is rather a constitutional than a local one; and in some cases, as in the use of aconite and ammonia, I believe we get the anæsthetic effect of those drugs. I know that Dr. Chase used to claim that he got the same effects from aconite given in homœopathic doses and dilutions.

Dr. McLain: The theory is plausible. A person having a rush of blood to the head, puts his feet into hot water, and the blood is drawn to the extremities from the head. And it is reasonable to suppose that the application of a strong substance, like strong ammonia, to the gum, would divert the blood that was being brought to the irritated point to another channel.

Dr. Bishop: For the last two or three years, I have been using carbolic acid; mixing a little of the powder with it, and putting it into the cavity, not pressing it down on to the nerve until I take a piece of punk and dry it out as thoroughly as I can; I then take my air syringe and evaporate all that I can with that; and then fill it with the oxychloride of zinc; making a cap of that, and drying it afterwards in the same way. My success has been greater in this way than any other.

Dr. Robinson: I very seldom get to where I can see the pulp. I very often know there is a pulp there only by feeling. I am in the habit of leaving, if I can, a portion of decomposed dentine over it. I saturate that portion with glycerine and carbolic acid, and then take up by absorbents all that can be taken up. Then I can account for the discrepancy between the success of these gentlemen in the use of the oxychloride of zinc in the way they mix it. If there is as much of oxide of of the chloride there will be an escharotic effect; but if it is mixed thickly it is always apt to crystalize, and the oxide is in active operation taking up the chloride, and there is not much escharotic effect. But how near we should go to the pulp, and what we should leave over it, is what I want to know.

Dr. Harding: I have had occasion in a number of instances to treat exposed pulps with temporary fillings, where it was

almost impossible to operate in any other way. In the treating of exposed pulps, where they have had to be treated, I found sometimes that the application of cold air from an air syringe was very painful. This led me to the idea that placing large bodies of oxychloride of zinc, which is of a very cold nature, immediately over the pulp, is productive of serious pain, the way patients manifest it. I find it necessary to warm fluid extract of aconite before applying it. I have a remedy for the pain caused by the application of the oxychloride in a cold state, and my remedy certainly employs an excess of the chloride. After applying the usual soothing applications, I mix my oxychloride then with an excavator, such as I can gain access to the cavity with and reach the bare nerve, and commence painting and building, a little at a time, perhaps at some distance from the bare nerve itself, and gradually working over it a little of this solution, giving it time to set; sometimes, in the meantime, having to mix up the oxychloride five or six times, and by building it a little at a time I save trouble and pain. Where I work with a less amount I am sure to give less pain than with a large quantity. I have filled cavities in this way where it was almost impossible to do anything else.

Dr. Robinson: I always mix my oxychloride, for capping, on a glass warmed to avoid the difficulties spoken of.

Dr. Brewer: I have had several such cases where the teeth died after the application of the oxychloride of zinc because of the pain produced, and, as I believe, the determination or exudation of plasma into the nerve tissue; the nerve canal being so small, the nerve tissue so enormously enlarged, being sufficient to strangulate it. The chloride of zinc was undoubtedly the agent that indirectly caused the death of those teeth. I have put this oxychloride of zinc into other teeth and had them survive. Again, I have had other cases where it would be eighteen months or two years before the nerve would die.

The use of shellac is spoken of in the capping of nerves. If carbolic acid is used as a dressing upon the nerves before this shellac is applied, as many use it, it will dissolve the shellac. Although I have used cotton and shellac in filling roots for years, Dr. Chase is the originator of it. It is popular to swab out the root with carbolic acid, but if you pour your shellac in there afterwards, you will have trouble, because it will

dissolve the shellac; the solution will run through the apex and inflammation of the periosteum will be produced. But I find it one of the best articles in the world with which to fill roots. After putting the shellac in the roots, it is better that we defer filling up the cavity until the alcohol is absorbed. The absorption of the alcohol would otherwise leave a vacuum. After the alcohol is absorbed, we take our plugger and press upon that. The object of filling the root is to seal the apex. It makes no difference about the centre of the canal. We want to see that this is closed. Then it is better to defer the closing up of the crown cavity for a day or two.

Dr. Birge: I have seen teeth destroyed by the use of arsenic in so many cases that I seldom and reluctantly use it.

Dr. McCowan: I have used oxychloride of zinc for years for capping, and have found it invariably caused pain when applied. I continued using it for capping until some four or five years ago, when I commenced the use of balsam of fir, which I used for some little time. Recently I have used a solution of gutta-percha and chloroform, merely to furnish a coat for the dentinal portions of the tooth where the cavity would approach near to the nerve. I would frequently merely varnish it over and then wipe out all that I could. There would remain just sufficient of this varnish to fill up the pores that would otherwise absorb the chloride from the oxychloride of zinc. By using the air syringe for a very few minutes the chloroform is practically evaporated, and there is not likely to be any vacuum formed by any after evaporation. I overcome the effect of the coldness of the oxychloride by putting it in in small portions, and gradually, so that it can be warmed by the walls of the tooth. I have been quite successful in my treatment of such cases. At least the percentage of successful cases is sufficient to justify me in continuing the practice.

I can hardly approve the use of albumen. It is a substance that is very prone to decay, and give off a great amount of very offensive gas. That gas, confined in the tooth, must cause pressure, and may have a specific effect upon the pulp. I would prefer the use of some more indestructible substance. I think shellac is too slow in drying.

Dr. Goddard: About six months ago I procured some of Weston's Non-irritating Cement, as it is called. I have used it for some time for capping, and have found that it has given

less irritation to the pulp than anything else that I have used. It is mixed with water; hardens in a few moments, though not as hard as the oxychloride. But in cases where the gold can be in a measure bridged over it; or where you do not have to pack directly on that portion of the cavity, it can be used in that way, covering it with no other material before putting the gold in. In some cases I put in first a little of that cement over the exposure, and over that some oxychloride cement filling; and I have had greater success in this way than with anything else that I have used, and the pain caused amounts to nothing. It seems to be just what it is named, a non-irritating cement.

Dr. Pierson: I have followed all the theories that I have heard explained, and some teeth I save and some I lose.

THE DISEASES OF THE GUMS AND THE ALVEOLAR PROCESSES, AND THEIR TREATMENT.

BY S. E. GOE., D.D.S.

Few tissues that go to make up the animal economy are as susceptible to inflammatory action as the gums; and when deseased, few are so fraught with evil results, being: 1st. Extensively supplied with blood vessels; 2d. Very much lacking in sensitive nervous distribution; admitting of serious invasion by disordered conditions, accompanied with comparatively little pain.

If unattended by more or less suffering, morbid conditions are rarely recognized. And in no cases is this fact more clearly demonstrated than in the various affections of the mouth and teeth. In the one great subject of dental caries, there is seldom recognition of the part diseased gums play in the premises. It is too often that professional men overlook morbid conditions of this tissue until disease has so far developed itself as to compel notice.

Usually a thickened condition of the gums immediately follows irritation, and is the first source of evil, as it increases the facility with which viscid mucus, or particles of food may be retained about or in its folds (and one condition always favors the other), there to become vitiated or decomposed, opening up avenues for the invasion of a train of evils rarely traced to their true origin.

The gums, though naturally not sensitive to the touch, in this abnormal condition become exceedingly so; bleed at the mere approach of the brush; cleanliness is apt to be entirely ignored; thus disease progresses, until suppuration, sloughing and fungus growths follow in sure, but unhappily, not rapid succession.

One office of the mucuous membrane of the mouth is to furnish a lubricating substance, and this for a two-fold purpose:

1st. It saves gums much that might be hurtful by diverting approaching danger into some safer channel. Its second office is to supply lubricating fluid to the food, facilitating its passage to the stomach.

Naturally the secretion of mucus for these purposes is regulated, as are all secretory substances, by the demand made upon them through normal processes.

While the combined secretions poured into the mouth, play a specific part in the great process of digestion, the office of the mucus is almost entirely mechanical, simply lubricating the gums and assisting deglutition.

I will not argue as to whether the saliva which finds its way into the mouth, may be, at times, excretory as well as secretory, but content myself with asserting that no injury will be done by response to calls made in a natural or healthy way. An opposite effect is produced if the natural source be impaired by inflammatory action and the secretion vitiated by mixture with a solution of decomposed animal matter. If allowed to remain in the mouth it becomes doubly acrid, working ruin to adjacent organs. I sometimes wonder if those cavities of decay around the necks of teeth, which begin with a white, opaque line, and develops into gaping caverns, so sensitive, that the slightest touch is almost unbearable, are always attributed to the real cause; if the condition of the gums around them are always (or ever, by many) taken into account. Is it an untenable supposition that the destructive agents, in this class of caries, exist directly in the mucus, either in its composition, or incorporated mechanically with it?

It has been asserted (and it seems reasonable), that the mucus itself, in its natural state, gives, under certain circumstances, an acid reaction. If this be true, we can readily understand how hurtful it may become, when diseased conditions of the gums are allowed to remain uncorrected. The dentist, only, can recognize these conditions, and it should be his duty to correct them.

In any disturbance of the natural processes or functions with which the professional man has to deal, the first thing to be sought is the cause; and of those above hinted at, the great, and I might say, the exclusive cause, is the deposit of salivary calculus upon the teeth, which usually finds a lodgment in the vicinity of the salivary duct. Unless there exists some condition of the system favoring inflammatory action, these only need to be removed to insure health and vigor to the gums, and safety from this source to adjacent organs, will follow as

a natural sequence. But when the case may be complicated, with general indications, predisposition, inflammatory diathesis, etc., they should be recognized by the dentist, whether he be able to correct them or not; and in these days of advanced learning, Dental Colleges, professional literature, and Associations, there is no excuse for him who cannot. Yet if he feels that greater good can be accomplished by his recommending patients to the care of a physician, this he should do. For the removal of deposits, instruments should be selected which will best perform the work. Some ingenuity will be needed at times to avoid undue laceration of the gums, especially when lodgment has been effected, well down (or up, as the case may be) on the roots of the teeth, occupying only a narrow line. Every point should be reached, carefully removing the minutest particles, leaving, if possible, a perfectly polished surface. In some peculiar cases it may be necessary to use some solvent for which the deposit may have an affinity. Sulphuric acid has been used and recommended; but this is a dangerous agent in the hands of the unskillful.

If the gums seem sluggish, present slight tumefactions and increased depth of color, the profuse bleeding attendant upon the cleansing process should be encouraged, and a mild astringent and stimulant applied once or twice daily, until the gums resume their natural compact appearance, and pale, flesh color.

Sometimes we are called upon to treat cases wherein collections of tartar have been of years' standing; the gums having suffered to such an extent that either considerable tumefaction has resulted, or the process of suppuration has done so well its work, that the gums have sloughed off, leaving the necks of the teeth denuded, and perhaps, so exposed the alveolus, that it has yielded and been destroyed.

Then the use of more heroic remedies is indicated. That portion of the soft tissues which cannot be restored to health, must be gotten rid of; and, that the living may be saved, powerful stimulants, mild escharotics, or even actual cautery find employment.

The gums are occasionally attacked by a disease so subtle, and yet so persistent in its work of destruction that it will baffle the most skillful. The process of devastation goes on in spite of all efforts to the contrary; and so far as observation can be depended on, necessitated by any existing cause. I believe the name of "devastation" has been given this affection; at any rate, it seems most fitting. According to my observation, it is most common with persons well advanced in

years. I have in mind one case attracting my earnest attention. When this devastatory process went on in the midst of conditions most favorable to health, excepting the age of the patient, which was about fifty years. When my attention was first called to the case, it was marked only by a slight recession of the gums, they presenting a somewhat wasted appearance and thin margin; the antero-superior gums suffered most; for two years, receding slowly but surely, leaving the necks of the teeth denuded, taking away, also, a margin of the alveolus.

The only cause that I can assign is, that all the mastication of food was done with the anterior teeth — in the absence of the molars. I have reason to think that this necessary habit has something to do with the process, not only in this, but in many other similar cases, especially in mouths from which the teeth are somewhat protruding.

Catarrhal inflammation of the gums is a disease not uncommon in climate such as ours. In using the term catarrhal, I mean that form which may and does exist, independent of local existing causes — although perfect cleanliness is so rare that deposits of tartar on the teeth is apt to accompany all affections of the gums, whether they are the primal cause or not—and is usually the accompaniment of cartarrhal disturbances in other localties—the throat, nasal cavities, autrum, etc.

So far as the gums are concerned, the disease is generally confined to the region of the incisor and cuspid teeth, and more frequently the inferior, as these localities are most subjected to thermal changes and influences. The periosteum of the teeth is usually involved, which is evidenced by some of the symptoms of periostetis; such as a sense of fullness, itching, and a desire on the part of the patient to subject the affected teeth to pressure, which seems to give temporary relief. According to Prof. Wedl, "a secretion of livid, gray mucilaginous, and frequently pusiform, collects in the pockets formed by the free margins of the gums, and oozes out when the finger is pressed along its borders."

I once examined a case of this kind, in which the disease was complicated by a rough and vitreous deposit of calculus upon the teeth, which, of course, added much to the extent of the trouble. The case was of years' standing; and when I saw it, the gum about the anterior teeth — both superior and inferior — was fast losing its integrity, and the periosteum of all the teeth affected; and, indeed, all the soft tissues in that locality was falling an easy victim to the ravages of this suppurating disease. Pressure being applied to the border of the

gum, considerable quantities of thick, grayish pus was liberated, giving off an extremely offensive fetor.

To the query, as to why the anterior gum alone should be affected by this form of disease, I can answer only by the fact that it is subjected to greater thermal violence, from being located near the mouth and salivary ducts.

The treatment of this affection must partake, to a great extent, of the character of the treatment of catarrhal disturbances elsewhere. Cleanliness should be strictly enforced; and the temperature of water used, should be nearly that of the secretion of the mouth. If possible, the mouth should be kept closed, allowing respiration to be conducted through the nose.

The pockets emitting pus should be injected with disinfecting and astringent lotions once a day, or more frequently if necessary, decreasing the applications as the gum assumes a healthy appearance.

The gum is oftentimes interfered with by the presence of ulcers, fistulous tracts, and receives injury of considerable moment by the existence of alveolar abscess. But as this form of disease, so far as the gum is concerned, is contingent only upon other trouble, and as, in most cases, it subsides after the abcess ceases discharging it is scarcely worthy of a lengthened treatise or discussion. In passing, however, it should receive some little notice, inasmuch as it reveals some beautiful examples of the ready provision for healing any injury to the gum. So quickly does the reparative process respond to demands made upon it and so earnestly it enters into the work that we can almost see it heal; so perfect, too, that scarcely a cicatrix is left to mark the existence of interrupted function.

It has been my purpose to confine myself to diseases of which I have had experience, consequently should I attempt to present a comprehensive paper on the disease of the alveolar process it would smack so strongly of the text-book as to be of no interest or use.

The alveolus often suffers from hindrances which are not strictly alveolar diseases. For instance, alveolar abscess is not strictly a disease of the alveolus, though it suffers more or less in each and every case and in various degrees, from slight inconvenience to ultimate death and exfoliation.

In every case of periosteal inflammation one of two things is inevitable, either the tooth must be forced from the socket as the congestion advances or room must be made for the swelling. By a wise provision of nature the alveolus yields to the pressure, either by accommodating the intrusion or giving

itself up entirely to the process of absorption. The pus secreting process grows on apace, the secretion must find an exit, and if in so doing it cut off the supply of pabulum to some portion of the alveolus we cannot wonder. Death of the bone thus deprived of its nourishment follows, and exfoliation is the next step in the work of destruction. The sequestrum itself becomes an irritating substance, suppuration continues until it be removed, either by nature's own process or by the hand of the surgeon.

The inexperienced will always encounter some difficulty in making out a case of necrosis, if it be entirely covered with soft tissue, as the swelling rarely assists in diagnoses. But to one used to delicate manipulations the probe will soon tell the story, even when the exfoliation be incomplete.

If the exfoliation be complete, removal, in many cases, will be all that is required. If the contrary be the case, injections of aromatic sulphuric acid will be an able assistant. Care should be taken that its acidity be duly neutralized after the application, in order to prevent injury to the teeth. The use of this agent is sometimes indicated after the necrosed bone has been removed in order to dissolve and render smooth the borders of the remaining portion, which must be accomplished ere the surrounding parts can be restored to health.

DR. SICHEL: I desire to call the attention of this Convention to an invention of our professional brother, Dr. Dennis, a pneumatic plugger. I am satisfied with what I have seen of it, but cannot explain it to you. I hope Dr. Dennis will kindly do so.

DR. DENNIS: It is not yet perfected or completed, and I prefer to say nothing about it, to raise the hopes of anyone, or to take any credit to myself, until it is. When all the little difficulties and obstacles are overcome that must be overcome, and all of the auxilliaries necessary for running it are completed, then I shall bring it out in a way that I think will be satisfactory to the profession. Until that is done, the profession had better not expect anything. It will take sometime to complete and finish it. I am in hopes that some day something will come of it, and then the profession shall have it.

There is one thing in respect to which I think we are behind our Eastern brethren and that is the use of the electric mallet; with all of its imperfections it is an excellent thing. I

know of nothing in the profession now, that is so important a help to the operator as the electric mallet, or something that may take the place of it, and I hope the little instrument I have spoken of may do it; that in time it may act as a substitute for the electric mallet, or be just as good. I think that with the pneumatic mallet, or one running by electricity, in the future we are to make very rapid strides in the symplifying of dental operations. I think we can operate faster and better, and a great deal easier to ourselves and our patients with, than without them. I think the profession should aim to make operations as simple as possible. After a cavity is prepared, it is as simple to fill a tooth with the pneumatic or electric mallet, as for an artist to paint. By the use of these mallets it is my opinion that the tediousness of the operations with gold is more than half overcome.

Dr. Robinson then read a printed synopsis of a paper read before the Dentalogical Society at Philadelphia, on the subject of the "New Departure," so called.

Dr. Lane: I thing there is something in this "new departure" worth our thought and attention. While we do not endorse it, it may teach us some good lessons, and one of those lessons is that we should not say that gold is the best and only filling proper to be used in every case, or that amalgam is the cheapest; but that we should in every case use our best judgment as to the material to be used and manner of treatment, adapting them to the circumstances of each case. I have some cases where the use of gold does not prove satisfactory, owing to the peculiar condition of the tooth, the secretions of the mouth or the sliva that indicates the kind of filling to be used.

Dr. Plompteaux: The St. Louis Dental Society say it is impossible to make a water-proof filling of gutta-percha or any of these compounds; and yet in certain conditions of the secretions of the mouth they claim that it will save the teeth better than a water-proof filling, because of the chemical action that has been spoken of this evening.

Dr. Knowles: These three gentlemen advancing and defending the new departure, are I think a little unbalanced as to the same subject; and that is, laying too much stress upon different electrical statuses that exists between the tooth and the materials we use for filling. This term electricity is a very

seductive one. It may mean a little or a great deal, just as you happen to understand it. If through the mediumship of this alleged electrical action the tooth decayed, and under no other influences, we should very properly devote our entire attention to the suppression of electrical action. According to their own statement the reason that decay goes on after a tooth has been filled is, that there is a disturbance of the electrical polarity between the tooth itself and the filling material. They say the reason that a tooth filled with gold decays, is because the tooth bone and the gold have different electrical statuses. In such a case as that, according to their idea, electrical currents would be established, and the gold, as in a battery, would remain untouched, and the tooth bone suffer accordingly. On the other hand they say in certain cases the filling material is acted upon, and the tooth bone remain intact. Let us suppose that the filling material is acted upon, and so far as the electrical currents are concerned the tooth remains intact; suppose that the filling material is removed in that way, will the decay remain in a perfectly quiet state all of that time? No, sir. The tooth is assailable by the acids that exist in the mouth. I don't see what possible protection a filling material that would substitute the portion to be decayed, would be; or what, if any use at all, except perhaps for the time being. It would be the most transient thing in the world.

But the intelligent thing to do, in case there is any truth in the reducing power of this alleged electrical current, would be, to do away with the exciting solution. In a chemico-electrical action it is necessary to have a positive and negative element, and an exciting solution. Without the existence of all three, no electrical currents will be generated. If such was the case, all that it would be necessary to do, would be, instead of hunting for some material that would be rapidly destroyed and thereby save the tooth, to try to find some way of neutralizing these exciting solutions, that is the fluids of the mouth.

It is to my mind all nonsense, the theoritically, trying to prevent decay from attacking the tooth in that way. Electrical currents are not the only causes of decay.

Dr. Birge: I don't see how it would be possible to permanently change the secretions of the mouth from an acid to an alkaline condition.

Dr. Knowles: There is no difficulty in doing that at all.

It depends altogether what the perversion of the secretions depends upon. The administration of any of the mineral acids will change the secretions from alkaline to acid; or the administration of any of the alkaline salts will change them from acid to alkaline.

It is my custom, in certain conditions of the mouth, to order the daily use of lime water (not lime juice) to correct the acid condition that is very frequently present in the mouths of pregnant women. It is a profusion of the secretion of the mucous follicles, around the necks of the teeth. I find that this treatment is sufficient; and that it stops this marginal decay.

DENTISTS AND DENTISTRY ON OUR COAST.

BY WM. H. ROBINSON.

The tendency of society has been to look to the old world and the older parts of the new world for the highest attainments in social, literary or professional life. Pedigree was supposed to be as important to professions as to thoroughbreds. But dentistry—modern dentistry—as we find in this continent, was a new departure in professional life. There was a want in society, a want that it required not only a high order of artistic and mechanical skill to supply; but that, combined with and directed by scientific knowledge of no meagre depth. Yankee ingenuity and versatility were peculiarly adapted to this work. Men of all schools and men of no schools had here an equal chance, and right earnestly did they apply themselves. Soon the general knowledge of the old world moulded by cunning hands and brains took definite shape and laid the foundation for a new profession. And now we have in the United States over 25,000 dentists, about twenty dental colleges, and a supply of dentists far in excess of the demand.

We have in San Francisco about 150 dentists; a number greater in proportion to the population than in any other city in the United States. Comparing the profession on this coast with our dental brethren in the East, we find only slight variations. In literary culture and general scientific attainments, the bright particular dental stars of the East outshine us. Their literary and dental schools are natural neuclei for the development of the profession in these directions. The literary culture of the East is a strong motor in these directions. Intelligent communities are apt to look a little askew at a man who claims *standing* in a *learned* profession and bears unmistakable evidence of being a profound ignoramus, and manifest some preference for the D.D.S. or M.D. who can speak his mother-tongue without murdering its simplest rules of syntax.

We are not so particular here, and pay a little more attention to a man's titles than to his vernacular. Of course nearly all our dentists are of Eastern manufacture. Those who are home-made like to go East for the finishing touches, and then, modestly hide their appendages under a bushel when they come home. But while we concede some superiority to our Eastern dentists in mental and literary culture, in thorough and practical every day operations, our dentists are the peers of any in the world. Indeed we are a little inclined to think the average California dentist in practical skill and manual dexterity is a little ahead of his Eastern brother. We only assert this of the average dentist; because the many large cities of the East have called for the highest order of talent, and this talent has had a high order of literary and scientific culture to guide it. Their associations, colleges and clinics, have enabled the many to become familiar with the highest manipulative skill and the finest executions of the best operators. We have followed these leaders more closely than the mass of dentists in the East. We do not claim to be ahead of our leaders—not even abreast—but not far behind; and that in 100 of our average dentists, you will find fewer botches and quacks than in the same number and class in the East. At any rate this was the fact a few years ago, before the special influx of the last few years brought forth wonderful manipulators, under whose magic touch ulcerated roots spring forth into health and beauty, with full-fledged crowns of—what you call it?

DENTAL FEES

Are popularly supposed to be much higher in California than in the East. And this is a great popular mistake. In villages of some parts of the East, where everything else is low, dental fees are low. But the fees of first-class operators in the large cities, for averaged operations, are 50 per cent. higher than in San Francisco; while for special operations, they charge two or three times as much.

The laws of demand and supply govern dental fees, as they do any other service or commodity; and in no business or profession is competition stronger than in dentistry. There are at least twice as many dentists in San Francisco as are necessary to do all the dentistry the public demand. The unchangeable law that says when we have twice the necessary supply of wheat, it must sell below its value, says when we have twice

the necessary supply of dentists, they will give their services too cheap.

CHEAP AND DEAR

Have a very peculiar application in dentistry. "What!" said a victim of the forceps, "charge a dollar for picking a tooth out in a second? Why, Dr. Lowfees pulled on one for an hour and only charged two bits."

We see wonderful advertisements telling about wonderful dentists! that do wonderful operations! at wonderful prices! such as filling a cavity that requires from five to ten dollars worth of gold and four or five hours work, and all for two dollars. And plenty of the public swallow the bait, and are no worse sold than those who patronize Dr. Exquisite, D.D.S., dentist, because he is gotten up in the latest style and charges so high.

P. S.—Since the foregoing was in ink this last gentleman has starved out.

But honestly, says the public, when dentists charge from five to one hundred dollars for filling a tooth and are busy all the time, are not their incomes enormous? Let the facts in relation to dentists, professionally and financially, answer this question. We have in San Francisco one hundred and fifty dentists. Let us classify their incomes, and by income we mean the *net* proceeds of his individual labor:

No. whose income exceeds	$10,000,	perhaps	none,	or	2 to 3
" " "	8,000,	"	"		4 " 5
" " "	6,000,	"	"		6 " 10
" " "	4,000,	"	"		10 " 15
" " is about	3,000,	"	"		15 " 20
" " "	2,000,	"	"		20 " 30
" " is bet.	$1,500 and 2,000,	"	"		20 " 30

This leaves half the dentists in our city on an income of less than $1,500, and one-half of these, or one-fourth, that have not a living income. Many from this class go into other occupations. We occasionally see one commander-in-chief of a street car, and even begging in the streets for food to eat.

Take the fifty dentists in San Francisco who have the largest income, and

The individual income of each does not exceed	$ 4,000
Fifty doctors that have the largest income	10,000
Fifty lawyers " " "	20,000

Now, if you would make a cattle show of these one hundred and fifty thoroughbreds and divide them into three classes, according to their natural ability, mental culture, and honorable manhood, they would stand about as follows:

I. Class.....	10	M. Ds.
	10	Lawyers,
	6	Dentists.
II. Class.....	10	M. Ds.
	6	Lawyers,
	30	Dentists.
III. Class.....	30	M. Ds.
	34	Lawyers,
	14	Dentists.

If our figures are correct, they show that we have fewer dissipated bummers among the dentists than in the other professions named. The average dentist is a thoroughly practical man; if he can't make a living at dentistry he can at something else. The practice of dentistry requires that a man shall have a cool head and steady hands at least six days in the week. People may trust their lives and fortunes to heads stimulated by Bourbon, but they prefer a sober head to guide forceps and pluggers.

THE HIRED DENTIST

Has to please two masters—the one who employs and the one whom he operates for. Often one of these masters is a mistress which does not lighten his task. He is usually a man of average ability and attainments; has carefully studied his profession and has had ample practice to make him competent. This has taken him from five to ten years, during which time if he has paid his expenses he has done well, and when thus prepared he receives the significant salary of from one hundred to one hundred and twenty-five dollars per month, and, in special cases, the privilege of working on Sundays for himself. Had the same man chosen commercial life, the same intelligence and energy would have placed him in a positions with from three to ten times the pay.

RICH DENTISTS.

Are very few and very far between. There is not a dentist

in the United States that ever has or ever will make in his profession what a business man would call a fortune. The richest dentists in the United States are in this city, and they are far from being what a Californian calls rich. And when you find a rich dentist, he has become so outside of his profession. The rule being that not one-third of those who enter the profession ever get a remunerative practice, and not one in a hundred accumulates twenty thousand dollars as the result of his life's labor.

San Francisco is a city of magnificent fortunes. Men in all occupations have made fortunes away up in the millions. The biggest financial feat we ever heard of a dentist accomplishing was a fortune of from fifty thousand to seventy-five thousand dollars. A few young dentists, by a lucky gale of fortune, have been blown into good practices. And a hundred have tugged for a bare living, or less.

Success in dentistry is a precarious element. The best dentists are by no means the most successful financially, and, conversely, the bad dentists are not the least successful. Professional ability, and by that we mean that mental and physical culture that qualifies him to do his work in a most thorough and scientific manner, is no guarantee of success. Some of our best dentists never obtain a living practice. Some of our worst make fortunes. How this happens, is not easy of explanation. The dentist who does his work in the most conscientious and scientific manner, is not appreciated by Mrs. Noodles and her retinue, like one who assures her that every simple filling is an exceedingly complicated operation, requiring very peculiar treatment and delicate manipulations, adapted to her constitution and idiosyncracies. We, by no means, would say that honesty and efficiency are not appreciated and rewarded in the dental profession; but that these will often fall behind blow and brass in the professional race. The *vox populi* is very apt to have a strange predilection for the dentist who just caters a little to Mrs. Fashionable's nice little foolish whims, or makes her think so. The shrewd dentist who makes his first object to please, gain a reputation and fill his pockets, often outstrips the dentist whose first object is the best interest of his patients.

Dead men tell no tales, is a professional motto dentists talked about considerably a few years ago, away down East. It means that the dentist who practices it don't risk his skill or reputation on doubtful teeth. The teeth he fills never ache. His professional reputation is too sacred to be risked on irri-

tated nerves or abscessed incisors. He would rather extract a dozen important teeth, than risk his reputation. The teeth he fills always do well. Now, there is his honest neighbor; he will risk his reputation trying to save every one of that dozen, and he will save nine or ten of them. But then he often has trouble with teeth he fills. Just think of it, says Madam Rumor, he doctored one of my teeth a month, charged ten dollars for filling it, and then had to pull it out. The fact is he saved nine or ten valuable teeth his neighbor would have extracted on sight. But he will have to bear blame and denunciation, while his neighbor's reputation is unsullied. A lady in Vallejo wears an upper set that the dentist who made them had such a regard for his reputation that, sooner than mar the beauty of his artificial work by making it antagonize with a sound lower molar that inclined forward, he extracted the molar. His work must be perfect.

Were we a congress to make rules to guide the public in regard to dentistry and dentists, we would say:

1. Patronize a dentist in whom you have confidence, and who knows more than you do about his business. If you can't find such a one among the reputable practitioners of the city, look at the advertisements in the *Chronicle*. You will find him there. He will promise all you want, and more too; and if you don't believe he'll do it, read his advertisement.

The dentist who publishes what we see in a certain class of advertisements, publishes what he knows to be false; and he does it to deceive, and is a liar and a fraud; and woe to the victims he lures to his den.

We know there are many practitioners whose services command a fee so high that the ordinary laboring class cannot patronize them. But we have another class of practitioners, that are honest and competent, who do not, in reality, charge as much as the frauds who bait their hooks with cheap advertisements. A dentist has a right to make his fee high or low, just as he chooses; but he has neither a legal, moral or professional right to do just what kind of work he chooses.

There are multitudes of very worthy people in our city, whose high sense of honor, and low condition of funds, tend to make them a prey for these buzzards. A lady, depending on her own labor, seeks the advice of a dentist. He finds one of her upper incisors aching; the others, decayed. Restoration with gold will cost twenty-five dollars to fifty dollars; besides some of the back teeth are decayed. And she can go to

D.D.S.'s dental parlors, have all her teeth out, and a brand new set, on a new and wonderful compound, and all for six dollars. And the cormorant who does it is meaner than the Tar-Flat hoodlum, who would garrote her. Dentists well understand this; but the unsuspecting public have to learn it by slow and bitter experience. The dentist who does honest service for small fees or nothing, merits gratitude. So does the surgeon who, for a small fee, amputates, and furnishes an artificial substitute. But the surgeon or dentist who sacrifices a limb or an organ for any fee, is low down in the scale of *carnivora*. All we have said against advertising frauds, we say just as plainly against frauds who do not advertise. We can afford to make our denunciation of the quacks and frauds in our profession severe, and then feel a little proud that we have fewer to denounce than our sister professions.

Dr. McLain: Coming from the East, where I have had ample opportunities of seeing the practice of dentistry in all of its grades, I can heartily subscribe to everything the author of this paper has said. The percentage of good practitioners in this city is, I think, more than the average in any eastern city. Take the city of New York, where the population more than triples this, and there the first-class operators may be numbered on your fingers. I have had abundant opportunities of witnessing and judging of their skill, having been the head of a college there for ten years, and meeting the dentists in the different parts of New York in conventions and associations. As a class, I think San Francisco can boast of more good dentists than any of the eastern cities.

I believe the profession is overdone; that there are too many inducements offered, and that too many are going into it outside of the legitimate channel. Where you turn out one D.D.S., there are hundreds who go into the offices and commence by sweeping out; begin to manipulate in the laboratory; and from there are taken to the chair; and are eventually turned out as dentists. It has cost them nothing, but they have made money in the time employed. We started one college with a purely benevolent object. The profession was being filled with incompetent, uneducated men; and we put our hands into our pockets and started this institution so as to get the best elements into the profession instead of these underlings. The result was that we were not patronized! We got one or two young gentlemen in good society and family; and the rest of them were turned out of the offices.

Dr. Dennis: I have in former meetings of this convention expressed my convictions as to the relative standing and merit of the dentists of this Coast as compared with those of the East, and I concur with the author of this paper in that regard.

Dr. Birge: I think Dr. Robinson, the author of the paper, should have stated that he has recently come from the East; otherwise it might sound as if we were praising ourselves.

Dr. Robinson: I have lived and practiced in the East until within the last three years.

THE USE OF THE MICROSCOPE.

BY J. L. ASAY, M.D.

The consideration of the microscope presents a range so broad and fertile from which to gather materials for an essay, that a writer on its powers, capabilities and usefulness, scarce knows where to begin, and having once begun reluctantly leaves off and writes " Finis " to his manuscript.

Without alluding to any particular instrument for the purpose of lauding its maker, or commenting on its merits or demerits, we will take it for granted that all scientific men are acquainted with its construction and have long since familiarized themselves with the phenomena of light, its rays, its angles of incidence, reflection and refraction, as taught in the many text books which have issued from the press from time to time, and are prepared to look into unexplored recesses for the wonders of nature and the exhaustless creation of animal forms, and thus render their share of tribute to scientific research.

The importance of microscopic investigation is so great and fully established that the wonder is, that the instrument itself has not become equally indispensible in the dental office for study as the engine, the mallet and rubber dam are for practical uses. The former teaches us the structure of healthy dentine and tissues, and exhibits their changes in disease, and its extent, and demonstrates the proper means of reparation and cure. The latter applies the information thus previously obtained to useful results. It is of essential aid to the dentist, inasmuch as it educates his mind to that standard of knowledge which should be possessed by every scientist, and so important has this knowledge become in other scientific circles, that he, who assumes the responsible offices of a profession, cannot hold the title of respectability among his fellows, unless conversant with its revelations.

Its utility to the dental student cannot be over-estimated.

It assists the vision in determining to what extent morbid structures may exist, together with their pathological phrases in their departure from health to disease, and by such assistance, the eye having been trained to discriminate between normal and morbid tissues, will be the better prepared when alone and unaided by such an auxiliary to more readily detect such differences, and the devoted, and here he would find that strange fascination which holds the Zoologist, Botanist, Mineralogist and Anatomist in wondrous admiration of what he beholds. and so to every one who would not only find in it a pleasure, but would enrich his store of knowledge by its developments, it becomes an instrument for pastimes, study and research.

Equally useful for domestic purposes, it detects the various adulterations of food and the luxuries of life. It discriminates between ground coffee and its admixtures of peas, beans, dried bone, sawdust, etc., exhibits the presence of mildew in flour, of water and chalk in milk, red lead in cayenne pepper, and of other fraudulent substitutions with which the manufacturer swindles and outrages a confiding public.

It assists the analyst in detecting the crystals of strychnia. zincia, daturia, morphia, and other poisons when administered by accident or criminal intent, and enables the law to mete out justice to the culprit. It assists in determining the innocent or malignant character of tumors. It demonstrates what salts are in excess in the urine and the condition of urinary deposits.

Its value is none the less in disease than in health, and the diagnosis of many operators will be better prepared from past observations to form a more positive conclusion in regard to the nature and character of the remedies to be employed, the extent of the operation required, and the prognosis of the disease; and here I would suggest that the standard of the dental profession can be materially raised in the future, by insisting that every student shall acquire a thorough knowledge of the instrument and its application to scientific uses, that he may see and comprehend for himself many facts which, though so trivial as to escape public mention, are in themselves of much importance and lead to the discovery of some hidden truth, or develop some richer treasure for its successor.

It is true that microscopic examinations are made in the presence of classes at our institutions of learning, but the course of study is so brief, the time so limited, the attention of the student preoccupied with other matters, that apart from the cramming process customary in all our colleges, he is unable

to give it that heed which its importance demands; hence, a much better way will be for him to become proficient in this branch, in the office of his preceptor, where can always be found some leisure hour which can be thus profitably employed. Important diseases have hitherto remained in obscurity until the microscope was employed for the detection of their pathological changes, and here the familiarity with the instrument becomes of the utmost interest to the non-professional man, who, by its employment, may frequently ascertain certain abnormal conditions of the system which otherwise would have escaped attention; for instance, the character of urine is known by its uric acid, urates, phosphates, oxalates, blood corpuscles, etc., as seen under the microscope, and having a knowledge of constituents in health, the individual may observe any departure from the normal standard, than he otherwise would, even before any appreciable symptoms might manifest themselves, and thus forewarned would be induced to apply those remedies proper to the case before any serious attack could occur or disease of a permanent nature be established.

It also makes known the cause of many diseases which depend upon microscopic vegetable growths, such as apthous inflammation of the mouth and throat, and that such diseases as scabies depend upon the existence of microscopic animals.

It lays before our astonished vision the wonders and magnificence of the before unseen creation, and instead of being a mere toy in the hands of the curious, has become the inseparable companion of all scientific men, to whom it opens new spheres of inquiry and rapturous delight, revealing objects in nature which, previous to its existence, were beyond the conception of our ideas, and tracing all forms of development from the minutest creature to the largest of living organism. It opens before him unexplored regions of nature and lifts the curtain of Egyptian darkness for the light of science to unfold the mysteries beyond. By it the smallest of living creatures contained in a drop of water, and of which over eighty millions are required to fill the space of one square inch, we behold most beautiful and varied forms, and are enabled to discover their motions and define their internal and external structures, and such minute creatures, invisible to the naked eye, form the greatest proportion of living bodies in earth and water. From the fresh water of the tiny rivulet to the dark and almost fathomless depths of the sea, such insects of creative power exist in all variety of forms and actions. Whether it be in

the chalk cliffs of Albion, in the limestone of our own Sierras, or the coral reefs of Polynesia, the microscope shows us that such animals have lived and do exist, and that these substances are filled with their remains, and are for the most part composed of their minute forms.

It has often been supposed that the microscope was an instrument of so mysterious nature, that but a few were capable of using it. Such, however, is an error. It is an instrument employed to assist the vision and increase the power of sight, and is but a few steps in advance of the spectacles of our grand sires and the magnifying glass of the child. True, its mechanism is delicate and will not bear rough and careless usage, yet is not so intricate but that any intelligent child could soon become an adept in its uses, capable of making considerable observation and soon acquiring the proficiency necessary for more difficult demonstrations.

Many instances of the benefit of the microscope might be here enumerated; its uses so varied and extensive commends it to the attention of all. But as a separate paper is appointed to be read on Dental Histology and Microscopy, it will not be my province to trespass upon such grounds; but in conclusion, would urge that in the future greater attention be paid to this subject, that the dental office may contribute its share of discovery to the literature of science.

Dr. Kingsbury: Dr. Dennis, whose is the best microscope?

Dr. Dennis: In regard to the best kind of a microscope for a dentist to purchase for its practical usefulness, I believe, after consulting the most eminent scientific men, that our Zentmayer's, which costs in proportion to size and accessories, is equal to any. Expensive microscopes are a waste of raw material.

Dr. Harding: I learn that during the past year there has been a great reduction in the price of microscopes, and that fine and very serviceable instruments can be bought for sixty dollars.

Dr. Halsey: I wish to report a case in practice, which is of considerable interest to me, never having had a like one before: Over two years ago, a gentleman brought his daughter, a Miss R———, aged eighteen, to my office to have a lateral incisor extracted. On examination, the gums were found to be very much inflamed, the lip swollen, and the tooth itself

extremely sensitive and sore to the touch. One corner of its crown had been destroyed by the action of dental caries. There was a cavity extending to the pulp which, from long exposure, had become devitalized. The patient was of German parentage and in the enjoyment of good health. Considering the subject a favorable one, permission was asked and obtained to try an experiment. The tooth was carefully removed and the sack of matter, which was found investing the apex, thoroughly removed. The cavity was then excavated and the nerve taken out, the canal cleaned, and body well filled with oxychloride of zinc. The socket was then well cleansed with tepid water and the tooth replaced with gentle pressure, the membrane, lining the socket, being first slightly irritated with a sharp instrument to produce a sufficient flow of blood to serve as a dressing. The patient was then dismissed with instructions as to the care of the tooth. A few weeks elapsed before seeing her again, at which time the tooth was found to be firmly fixed in its place, the patient having been put to no other inconvenience than what naturally follows operations of this kind. Three weeks ago the oxychloride was removed from the crown and replaced with gold, and the tooth promises well for years of good service.

Dr. Sichel: I have never seen a nerve in a tooth when the tooth was extracted, and when the sack was on it. The nerve is generally devitalized and there is nothing to be seen of it.

Dr. Robinson: I have seen quite extensive sacks when there was a certain amount of vitality in the nerve. I have also seen them when there has not been any nerve in the tooth for years.

TRANSACTIONS

OF THE

CALIFORNIA STATE DENTAL ASSOCIATION,

AT THE

TENTH ANNUAL SESSION,

HELD AT SAN FRANCISCO,

Commencing May 13th, 1879.

OFFICERS—1878-9.

President,

S. W. DENNIS.

Vice-President,

J. S. CRAWFORD.

Recording Secretary,

S. E. GOE.

Corresponding Secretary,

H. E. KNOX.

Treasurer,

J. J. BIRGE.

Librarian,

WM. DUTCH.

TRANSACTIONS

OF THE

California State Dental Association

TENTH ANNUAL SESSION.

San Francisco, May 13th, 1879.

The Association convened in the Palace Hotel at 10 A. M., and was called to order by the President, S. W. Dennis, M.D.

J. F. Grady, D.D.S., M.D., applied for membership. Referred to the Executive Committee.

A committee, consisting of Drs. Dutch, Lane and Dunbar, was appointed to arrange hours for holding sessions.

The committee recommended that the Association hold its sessions daily, from 10 A. M. to 12 M.; from 2 to 5 P. M., and frm 7.30 to 9 P. M. Adopted.

On motion of Dr. Dutch, the reading of the President's Annual Address was made the special order for 2 P. M.

Adjourned.

FIRST DAY—AFTERNOON SESSION.

Called to order at 2 P. M. by President Dennis.

Minutes of previous session were read and approved.

Pursuant to special order, Dr. Dennis read the President's Annual Address.

Dr. McLain, Chairman of the Committee on Dental Literature and Education, made a report.

Dr. Robinson read an essay entitled "The Reflex Influence of Dental Associations and Colleges on the Profession."

On motion of Dr. Dunbar, James Taylor, M.D., D.D.S., and Professor H. A. Smith, of Cincinnati, O., were made Corresponding Members.

A letter from B. S. Codman, D.D.S., presenting the Association with twenty-five copies of a treatise on Foul Breath, was received and placed on file. Also a letter from Dr. O. D. Munson, of San Francisco, accompanied by $20.00 in gold coin. The Secretary was instructed to extend a vote of thanks to both gentlemen for their contributions.

Adjourned.

FIRST DAY—EVENING SESSION,

Called to order at 7.30 o'clock; President Dennis in the chair.

Minutes of afternoon session were read and approved.

Leopold Neumann, D.D.S., of San Francisco, applied for membership.

Dr. J. F. Grady was regularly admitted to membership.

The Treasurer, J. J. Birge, made the following report, which was referred to the Executive Committee:

J. J. BIRGE, TREASURER, IN ACCOUNT WITH CALIFORNIA STATE DENTAL ASSOCIATION.

1878.	*Dr.*		
June 5.	To balance in my hands.....	$280 80	
" 6.	" received of Dr. Plomteaux, *Sec.*	265 00	
" 7.	" " " " Goe, "	35 00	
		580 80	
1878.	*Cr.*		
June 6.	By paid Dr. Plomteaux, voucher No. 1.....		$124 25
" 8.	By paid "Alta," advertising meeting, voucher No. 2.....		1 90
" "	By paid Dr. Belding, reporter, voucher No. 3.....		40 00
" 12.	By paid "Call" office, advertising, voucher No. 4.....		3 50
" 17.	By paid "Chronicle," advertising, voucher No. 5.....		3 50
July 1.	By paid E. S. Belding, transcribing, voucher No. 6.....		38 00
1879.			
Feb. 1.	By paid H. S. Crocker & Co., printing, voucher No. 7.....		34 05
May. 12.	By balance in my hands.....		335 60
			580 80

Respectfully submitted,

J. J. BIRGE, *Treasurer.*

Dr. S. E. Knowles, made an individual report from the Committee on Dental Histology and Microscopy.

Adjourned.

SECOND DAY—MORNING SESSION.

Called to order at 10 A. M. by President Dennis.

The minutes of previous session were read and approved.

W. A Knowles, D.D.S., M.D., of San Francisco, applied for membership.

The Executive Committee reported favorably upon the applications of Drs. Neumann and W. A. Knowles, and both gentlemen were elected to membership.

The "San Francisco Chronicle" rendered a bill of $1.50, for advertisement, which was referred to Executive Committee.

The Secretary read a statement of account with A. L. Bancroft & Co. to the effect that 176 copies of Transactions for 1874, and a balance of $9.00 due the Association were still in their hands, accompanied by a letter asking that the account be settled. The matter was referred to the Executive Committee.

Dr. Dunbar read an individual report from the Committee on Dental Therapeutics.

Dr. Sichel, of the Committee on Dental Chemistry, made a report.

Dr. McLain read a volunteer essay, entitled "Cancroid Stomatitis."

Dr. Brewer volunteered to clinic at 1 o'clock P. M.

Adjourned.

SECOND DAY—AFTERNOON SESSION.

President Dennis called the Association to order at 2 P. M.

The minutes of morning session were read and approved.

Dr. W. E. Brooks, of Oakland, applied for membership.

The Executive Committee reported that they had examined the accounts of the Treasurer and Secretary, and found them correct.

J. H. A. Folkers & Bro. presented a bill of $8.50, for gold and rubber cloth, which was referred to the Executive Committee.

Dr. E. F. Bunnell resigned his membership, and, on motion of Dr. Knox, he was elected an Honorary Member.

Dr. Asay read a report from the Committee on Dental Chemistry.

Dr. Birge read an essay, entitled "Dental Ethics."

Dr. Robinson read an essay on our "Ethical Code."

Adjourned.

SECOND DAY—EVENING SESSION.

Called to order at 7.30, President Dennis in the chair.

Minutes of the afternoon session were read and approved.

Dr. W. E. Brooks was regularly admitted to membership.

A paper, entitled "Operative Dentistry," was received from Dr. M. H. Webb, of Lancaster, Pa. After a portion of the same had been read, Dr. C. C. Knowles moved that the further reading of the paper be dispensed with. Carried.

A paper, entitled "Artificial Dentures a Source of Bad Breath," by D. C. Hawxhurst, of Battle Creek, Mich., was read by the Secretary.

On motion of Dr. C. C. Knowles, the Secretary was instructed to return the paper just read, per request of Dr. Hawxhurst, and to extend a vote of thanks for the contribution.

On motion of Dr. Dutch, the election of officers was made the special order for Thursday, at 8 o'clock P. M.

It was announced that Drs. Griswold and Dunbar would clinic at their offices at 1 P. M. Thursday and Friday, respectively.

Adjourned.

THIRD DAY—MORNING SESSION.

President Dennis called the Association to order at 10 A. M.

Minutes of previous session were read and approved.

Dr. Geo. W. Luce, of Oakland, applied for membership.

A volunteer essay was read by Dr. Brewer on "Dental Therapeutics."

The Secretary read a paper from J. Foster Flagg, entitled "The True Inwardness of the New Departure."

On motion of Dr. Lane, the Secretary was instructed to retain Dr. Flagg's paper until he should obtain a copy for his own use, and to tender him a vote of thanks for the same.

The Secretary also read an essay from the pen of Dr. D. Cave, of San Diego, on "Celluloid."

Dr. Lane gave a clinic in the Association rooms at 1 P. M.

Adjourned.

THIRD DAY—AFTERNOON SESSION.

Called to order at 2 P. M., President Dennis in the chair.

The minutes of morning session were read and approved.

Dr. Luce was regularly admitted to membership.

Dr. Dennis, Chairman of Committee on Dental College, reported the following:

Resolved, That the Committee report to the State Association that we have failed to accomplish anything in the direction of the establishment of a Dental College, and asked to be discharged.

S. W. Dennis, *Chairman of Committee.*

San Francisco, May 15, 1879.

Adopted.

The Committee on Dental Legislation made the following report, which was adopted:

San Francisco, May 15th, 1879.

To the President and Members of the California State Dental Association:

Gentlemen: — Your Committee on Dental Legislation respectfully report that they have prepared a bill, which they recommend to be laid before the next Legislature of this State; a copy of which is herewith submitted for your approval or rejection.

Respectfully,

S. W. Dennis,
J. L. Asay,
J. S. Crawford,
S. E. Knowles,
Committee.

(See bill and discussion back of book.)

Dr. C. C. Knowles moved that a committee of five be appointed, who shall be the custodians of said bill, and to take the steps contemplated by the report of the Legislative Committee.

The President appointed Drs. Asay, Dunbar, Knox, S. E. Knowles and Dutch to act on such committee.

A paper was read by the Secretary from Dr. W. H. Atkinson, of New York, entitled "Pathology."

On motion of Dr. C. C. Knowles, the Secretary was instructed to extend a vote of thanks for the contribution.

Adjourned.

THIRD DAY—EVENING SESSION.

Called to order at 8 P. M.; Dr. Dennis presiding.

Minutes of previous session were read and approved,

Election of officers being the special order of business, the Association proceeded to ballot, with the following result:

President—A. F. McLain, of San Rafael.
Vice-President—S. E. Knowles, of San Francisco.
Secretary—S. E. Goe, of San Francisco.
Corresponding Secretary—H. E. Knox, of San Francisco.
Treasurer—J. J. Birge, of San Francisco.
Librarian—Wm. Dutch, of San Francisco.

After the officers elect had been duly installed, Dr. Younger moved that a vote of thanks be tendered Dr. Dennis, the retiring President, for the earnest and successful manner in which he had conducted and presided over the meetings during the past year.

On motion of Dr. Dennis, a vote of thanks was given the retiring officers for their services during the past year.

Adjourned.

FOURTH DAY—MORNING SESSION.

Called to order at 10 A. M. by the President, Dr. McLain.

Minutes of previous session were read and approved.

Dr. Younger moved the adoption of the following resolution:

Resolved, That a committee of ten be appointed by the chair, with full power to proceed with the organization of a Dental College in such manner as they may deem advisable.

Dr. Dennis moved that said committee be elected by ballot instead of appointed by the chair. Carried. And the Association elected the following members to act as Committee on Dental College:

Wm. Dutch, S. E. Knowles, H. E. Knox, J. A. W. Lundborg, W. J. Younger, S. W. Dennis, C. L. Goddard, Wm. B. Kingsbury, A. F. McLain and S. E. Goe.

Dr. Dennis tendered his resignation as member elect to said committee, and, on motion of Dr. C. C. Knowles, same was accepted.

Dr. J. J. Birge was elected, by acclamation, to fill the vacancy caused by Dr. Dennis' resignation.

Dr. Dutch moved that the Association hold its next Annual Session in San Francisco, commencing at 10 A. M. on the second Tuesday in June, 1880, and to continue four days. Carried.

On motion of Dr. Kingsbury, an order was drawn on the Treasurer for the sum of $50 in favor of the Secretary, for his services during the past year.

It was announced that Dr. Sanger would clinic at his office at 1 P. M. Friday.

Adjourned.

FOURTH DAY—AFTERNOON SESSION.

President McLain called the Association to order at 2 P. M.

Minutes of previous session were read and approved.

Dr. Dennis, Chairman Publication Committee, made a report, which, on motion of Dr. Dutch, was adopted.

MR. PRESIDENT AND GENTLEMEN:—Your Committee on Publication beg leave to make the following report:

At the close of our last Annual Session, the following resolution was offered by Dr. Lane:

"I move that the Publication Committee be instructed to " have the transactions of this Association for this year with " a synopsis of the past unpublished matter published."

Now, the ambiguity of this resolution was a difficulty that your committee could not, or at all events, did not, overcome. We know that there were papers worthy of publication as a whole; and as one of the members said to me, when we interviewed him (and whom we tried to get to serve upon the committee), no one would consent to have his papers mutilated. And here we were troubled to determine what was meant by the word "synopsis." If it did not mean a *part* of each paper, it must have meant the business detail, and your committee believed that such matter was old, of little consequence to us, and far less to the general profession or to the people.

No one can fail to observe, who reads the transactions of other societies, that the business matter is treated as of secondary importance.

Your committee wishes to add that, when its duties are sufficiently defined, so that there can be no unnecessary clash between it and the Society, it has no objection to the performance of the duty, should it be called upon in the future to perform it. Until then, it begs leave to decline assuming unnecessary responsibility that is so likely to end in unjust criticism, if not to say ingratitude.

Respectfully submitted,

S. W. DENNIS,
S. E. GOE,
J. J. BIRGE.

On motion of Dr. Dutch, the President and Secretary were empowered to audit all just bills which might be presented after the close of the session.

On motion, a vote of thanks was extended the members of the press for the courtesy we had received at their hands during our meetings.

On motion of Dr. Dennis, the proprietors of the Palace Hotel were given a vote of thanks for the gratuitous use of their rooms occupied by the Association.

On motion of Dr. Dennis, D. C. Hawxhurst, M.D., D.D.S., of Battle Creek, Mich., and Marshal H. Webb, D.D.S., of Lancaster, Pa., were elected Corresponding Members.

On motion, the President appointed a committee, consisting of Drs. S. E. Knowles and C. L. Goddard, to draft resolutions of respect to the memory of the late Prof. J. H. McQuillen, of Philadelphia.

Dr. Warner read a paper from the hands of Dr. H. C. Davis entitled "Dental Legislation."

The Obituary Committee made the following report, which was adopted:

WHEREAS, Dr. J. H. McQuillen has been suddenly removed from among us by death, it becomes our privilege as well as our sad duty to make record of the event, and to express our estimate of his worth, and our sense of the loss thus sustained; therefore:

Resolved, That Dr. McQuillen has been for many years so identified with the interests of the dental profession, and so earnest in their advancement, so indefatigable in his efforts in behalf of the elevation of the standard of education, of graduation, and of practice, that his death leaves no one man who, in all respects, fills the place thus made vacant.

That, while, as an operator he was gifted with more than ordinary ability; while, as a teacher, he was conscientious and earnest, his labors in the organization of the profession, and in promoting its educational interests, gave him marked pre-eminence.

That, more ready to serve than to be served, more solicitous for the advancement of the profession with which he was identified than for personal advantage, he, indeed, too often ignored the latter in the effort to promote the former.

That a life devoted to the self-sacrificing service of his profession, and to the promotion of all plans having for their object its improvement, made him an example of concentration, of industry and of persistent effort worthy of imitation.

That these resolutions be spread upon the minutes of this Association. That a copy be transmitted to his bereaved family.

S. E. KNOWLES,
C. L. GODDARD.

On motion of Dr. Plomteaux, the Dental College Committee was empowered to fill any vacancies that may occur therein by the election of members of the Association.

A letter was read by the Secretary from Dr. Geo. A. Mills, of Brooklyn, N. Y., corresponding member.

The following Standing Committees and Essayists were appointed for the ensuing year:

STANDING COMMITTEES.

Dental Pathology and Surgery—S. W. DENNIS, F. A. BREWER and W. F. BISHOP.

Dental Therapeutics—C. L. GODDARD, W. C. HARDING and I. SANGER.

Dental Chemistry—C. S. LANE, J. A. W. LUNDBORG and C. E. DAVIS.

Dental Histology and Microscopy—J. L. ASAY, W. J. PRATHER and LEOPOLD NEUMAN.

Operative Dentistry—L. L. DUNBAR, L. B. HOLMES and J. S. CRAWFORD.

Mechanical Dentistry—JOHN RABE, D. CAVE and I. S. HALSEY.

Dental Literature and Education—H. J. PLOMTEAUX, W. H. ROBINSON and W. A. KNOWLES.

Dental Ethics—W. B. KINGSBURY, WM. DUTCH, J. A.W. LUNDBORG, S. E. KNOWLES and MAX SICHEL.

Publication—A. F. McLain (ex-officio), H. J. Plomteaux, S. E. Goe (ex-officio), H. E. Knox and S. W. Dennis.

Executive—A. F. McLain (ex-officio), Wm. Dutch, S. E. Goe (ex-officio), C. L. Goddard and Wm. B. Kingsbury.

Legislative—J. L. Asay, H. E. Knox, L. L. Dunbar, Wm. Dutch, S. E. Knowles and A. F. McLain.

Dental College—Wm. Dutch, H. E. Knox, W. J. Younger, Wm. B. Kingsbury, J. J. Birge, S. E. Knowles, J. A. W. Lundborg, C. L. Goddard, A. F. McLain and S. E. Goe.

THESES.

Treating and Filling Pulpless Teeth—A. Warner, Jr.

The Relation between Dental Surgery and Medicine—W. A. Knowles.

The Management of Deciduous Teeth—S. E. Knowles.

Dental Etiology—W. J. Younger.

Treatment of the Mouth Preparatory to Filling—T. S. Whipple.

Dental Hygiene—H. C. Davis.

Alimentation of Tooth Tissues—W. H. Robinson.

The New-Departure—W. F. Griswold.

Receipts for the year ending May 16th, 1879, were:

Annual dues	$210 00
Initiation fees	20 00
Donations	20 00
Total	$250 00

Minutes were read and approved.

Adjourned, to meet June 8th, 1880.

S. E. GOE,
Secretary.

ADDRESSES,

REPORTS OF COMMITTEES,

ESSAYS AND DISCUSSIONS.

1879.

ERRATA

Page 179, third line from bottom, for "*an*" read "*one*".

Page 180, eighth line from top, for "*speading*" read "*speaking*".

Page 184, second line from bottom, for "*make*" read "*made*".

Page 186, top line, for "*decidedly*" read "*declared*".

Page 189, fifth line from top, for "*consent*" read "*conceit*".

LIBRARY
COLLEGE OF DENTISTRY
UNIVERSITY OF CALIFORNIA
SAN FRANCISCO,

PRESIDENT'S ANNUAL ADDRESS.

BY S. W. DENNIS, M.D.

GENTLEMEN OF THE CALIFORNIA STATE DENTAL ASSOCIATION:—Article One, Section One, of the By-Laws of the Society, reads as follows:

"*Duties of the President:* He shall preside at all meetings "of the Association; deliver an address, to be styled 'The "President's Annual Address,' during the first meeting of each "annual session."

I did not know, or rather did not remember, that this was the *law*, but I did know that it was the *custom;* one that I, perhaps, as much as any one else, helped to establish, because I thought, and still think, that a presiding officer can, if he will, lead a public body into a consideration of questions of great moment and profit, when otherwise its time would be absorbed by a discussion of matters more of a personal or irrelevant nature than for the general welfare.

I have thought I would like to "seek emancipation" from this custom, for the reason, more than any other, that some members of our Society, for some time past, have shown a tendency to "shirk" the duty of committing their thoughts to writing on the living professional issues of the day. Members have expressed a desire not to be put on committees, and others have sought positions where it appeared they did not intend to act, and others—a few, a *very* few—have done their whole duty from beginning to end; and why should not the President share the repose, or seek immunity from the perplexities arising from such intellectual activity? You will say the law is explicit upon the duties of the President; *I* shall say, so it is upon the duties of the committees. Section Fourth of the By-Laws says of the committees, that: "each committee "*shall* report upon all matters referred to them," etc., etc.

But in a specialty like ours, so active and progressive, it would seem inappropriate for me to attempt to open a meeting without some suggestions. I shall detain you, however, but a few moments.

We can easily tell by the record, who have been active and who have been passive members of our Society. We can also readily ascertain who come to the front when their selfish aggrandizement is liable to be enhanced, and I have thought whether the language of Tyndall, (which I shall adopt before I close) which is applicable to and literally true of us, may not lead one into pioneer grounds too prolific in underbrush, and common vegetation, to justify one in leaving an inherited home, with its garden of beautiful flowers and their sweet fragrance.

I think all of our active members are living to-day who were with us one year ago. However, one of our most distinguished Honorary Members, Professor John Hugh McQuillan, has suddenly passed away. It was as pleasant a privilege for me to propose him to the honorary membership of this Society, as it is now my sad duty to announce his sudden demise.

Nothing has transpired since our last meeting that in any manner has tarnished our good name, and for this, more than anything else, we ought to feel thankful.

A retrospective view of the past would recall many pleasant incidents, and more than all, the great progress that has been made in every department of dental science during our associated labors. We have had our trials, as all organizations have, and will continue to have as long as a man's moral, legal, or professional ideas are circumscribed and influenced by material things. Truth, like water, seeks its level, though it may be a long time reaching it. "Dentistry has really become a science." These words are almost as common in the community as household words. It may be, it is said, that all dentists do not belong to our society. It is true. An analysis of the causes would reveal a singular medley of reasons. Nothing but a "New Constitution," * prolific with promises of a plenty of positions and a division of the spoils, a restoration to citizenship, etc., etc., would be any inducement to some members of the profession to come out of their seclusion. But ought we to complain? No! The reasons why some do not join us are as reprehensible as the reasons why some do. To lift the cloud of ambiguity from this paradox, I will add, if

* A hit at local politics and communistic agitation.

one affiliates with his brother as a matter of business, or to obtain an advantage, the purity of his motive may be questioned. For instance: I once knew of a migratory dentist who attended one meeting of the San Francisco Dental Association. He said: "I think we ought to increase the prices. We ought to agree on a schedule of fees." I answered that I was opposed to any discussion or legislative action upon the *question* of fees; that it was too often the case that those who favored such action were the first to violate it. The language that I used was not original; it was adopted, but true. In reply he said: "If half a dozen Dutchmen can get together and put up the price of *beef*, I do not see why half a dozen dentists cannot get together and put up the price of dentistry." Dr. Ball replied in these well-chosen words: "Do you know that the Dutchmen can all furnish the same kind of beef, but that dentists may not be able to furnish the same kind of dentistry?" So far as I know, these words were original; at all events they were irrefutable, and the man went out of the Society that evening never to return. And then do not members of the profession, outside our Association, "pride themselves on knowing it all?" Do not some charge us with being a mutual admiration society? Theoretically, that may possibly be correct, put practically it is not so. Yet our Society is no exception to the general rule, for in the State of Michigan there are 364 practitioners of dentistry and only 46 of them are members of the State Society; and out of about 240 in our own State, there are 60 members of our Society. Of 700 or more physicians in California, only 259 are members of the State Medical Society, and there is hardly ever an attendance of a hundred, So, even the causual observer will not fail to see that our profession in California is not entirely wanting in public spirit, but that it has a better average membership than is found in similar societies in other States and in kindred professions.

DIFFERENCE IN OPINION.

"Why shall we not differ in opinion?" We certainly may, but while we claim the privilege, let us not forget that every difference in opinion is not a difference in pinciple. The popular idea is best illustrated by the case of a lady who came into my own office only a few days ago and asked my opinion. I gave it, when she said: "If I could find two dentists of an opinion, I could decide what to do." Now, I am unable to see why there should not be a difference of opinion among us as

well as among other professions, or callings; a pathological condition in two persons might, to the superficial observer, appear the same, but to the careful one quite different. I know of no way to illustrate this point better than to cite the frightful maladies that result from inability to recognize conditions that demand radical—conservative treatment. A person may lose half or the whole of his maxillary by an attempt to retain one *dead* tooth, or, more technically speading, one devitalized tooth. It might not be agreeable to tell the patient that he is syphilitic, or even strumous. The physicians, I mean the general practitioners of medicine, some of whom seem to think that our professional sphere is circumscribed by mechanical principles, would say: "It is your business, only, to dig out holes in teeth and plug them." But we know better the boundaries of our field of usefulness.

In the theological profession also, there is a wide difference of opinion; wider, indeed, than in that of dentistry or medicine, yet the various associations of disciples all have a "saving ordinance," or one platform upon which they can stand. Now, I believe a study of the laws that govern this universe, the infinite mass, the atomic and molecular relation of the elements of matter, and the application of that knowledge in our profession, is our "saving ordinance;" and, while I would not deny any one the comfort and satisfaction of considering their future spiritual welfare, I feel like encouraging a more careful inquiry into the physical condition of our present state. I am likewise informed that about six thousand legal cases have been decided on appeal from lower courts by our Supreme Court. Many of these cases have been sent back to their source, and it is said that this highest legal tribunal of our State has overruled one hundred of its own decisions.

Again, I suppose that there is no fracture known to surgery that has given rise to more methods of treatment than that of the clavicle, and only because there are so many causes that give birth to various suggestions and appliances. And now, in view of such an array of facts, let me ask again: "Why should we not differ in opinion?"

TRANSPLANTING TEETH.

An American has gone to Paris, France, and reviewed the practice of replanting and transplanting teeth.

If there are any in this Society who do not distinguish the difference between replanting and transplanting, I will ex-

plain that, one is returning a tooth to the place from whence it comes; the other is transferring it to a new *soil.*

Dr. Bogue, of New York, considered this subject quite ably in a paper before the New York Odontological Society, in which he says: "I hold in my hand about fifty references in "regard to transplantation and replantation of teeth. These "references range all the way from 1777 to 1877, and they are all "records of experiences. These experiences are as various in "their character as the persons who recount them; but they "all tend to show that there is no physiological reason why "replantation when necessary, and even transplantation under "proper conditions, should not be successful. Benjamin Bell "asserted that when he wrote, it had not been half an age "since English surgeons classed it among regular operations, "(Am. Lib. Dem. Science Desirabode, Vol. vii. and viii., page "365, republished 1847)."

If we had no other literature than this from which to draw a conclusion, I would say it would be well for us to consider our cases thoroughly before we bid for public approbation in experiments of this kind, when the transmission of disease is so likely to follow.

In the medical transactions of the College of Physicians of London, England, published in the year 1785, Dr. William Watson, at that time the Vice-President of the Royal Society, gives an account of (case III) a young married lady, about twenty-one years of age, "who had a tooth transplanted into "the socket of one of the incisors of the upper jaw. The new "tooth fastened exceedingly well. It remained firm for a "month, when her mouth became very painful. The gum "became ulcerated, and part of the alveolar process was left "bare. Before another month the ulceration occupied the "whole space under the upper lip, between the teeth and "nose. It extended likewise to the cheeks and throat. "Blotches then appeared on her face, neck, and various parts "of her body; several of these became ulcerated, painful sores. "After trying a variety of tonic medicines without benefit, "two grains of calomel were ordered, once or twice a day. "She took about fourteen pills, when she was obliged to dis- "continue the use of calomel on account of the griping and "purging which it produced. During the time that she was "taking the pills the ulceration of her mouth and cheeks did "not spread, but were less painful, and of a milder appearance. "The blotches on her face and body grew paler, and such of "them as had ulcerated, healed apace, and no new ones

" appeared. The mercurial inunction was now tried, but in " ten or twelve days the griping and purging returned, and " the ointment was discontinued."

If the great John Hunter, who made syphilis in all its varied contagion a special study, could not detect the presence and prevent the transmission of this disease, how can we in our circumscribed sphere of action expect anything but evil results from this line of practice? In Hunter's day experiments in the transplanting of teeth—for experiments they were to some extent—were more justifiable and necessary than now; for there were not many, if any dentists then, and artificial dentures were almost unknown; while now we have a *few* dentists, and artificial dentures are plenty; cheap in *all* cases, and quite artistic in *some*. Perhaps it will not be uninteresting to read evidence that transplanting teeth *may* prove successful. Lee on syphilis says: " Hunter showed experimentally " that every part of an animal had its own independent vitality, " and that it would retain this vitality for a time after it was " separated from the rest of the body. He removed the testis " from one animal and placed it in the peritoneal cavity of " another, and the testis lived independently until it formed " fresh connections and became part of the animal into which " it had been transplanted. In like manner, as illustrated by a " beautiful preparation in our Museum, he planted a tooth in " the comb of a cock. * The tooth maintained its independent " vitality until adhesion occurred and the vessels of the tooth " communicated with those of the comb of the cock. In this " preparation the vessels of one may be seen communicating " with the vessels of the other. The healthy living actions " commenced in one would be carried out in the other; or, to " speak in accordance with modern physiological nomenclature, " 'the bioplasts on one structure would continue their growth, " their development, and their actions in the other.'"

The healthy actions of the two would thus be in perfect sympathy; and not only may healthy influences be transferred from one part to another, but diseased actions may likewise be so communicated.

Some of our newspapers have given this method to their readers—as it was given to them—as something new and safe, while it is quite old and very dangerous. Thomas on Gynascology says: " A knowledge of what has been accomplished " in reference to any subject, and what was known concerning

* Since writing the above, I have had my attention directed to a similar and successful experiment by Prof. P. G. C. Hunt, M.D., D.D.S., of Indianapolis, Indiana.

" it in previous ages cannot fail to interest the student and " render him more capable of appreciating recent advances." " In this way, too, a taste for the study of ancient literature " may be inculcated, and many a useful hint, many a sugges- " tive statement, may be met with, which will germinate for the " common good. Some of the most valuable contributions to " modern gynascology will be found to be foreshadowed, or " even plainly noticed, by the writers of the past age, and " afterwards entirely overlooked. As examples may be cited, " the use of the uterine sound, spongetent, dilatation of the con- " stricted cervix and even the speculum itself. Indeed we " need not seek in ancient literature for illustrations of this " fact, for nowhere could a more striking one be found than " that of so valuable a proceedure as Sim's Operation for " Vesico-vaginal fistula being fully described in every detail in " 1834, and so completely forgotten in twenty years as to be " accepted as entirely new at the end of that time."

LEGISLATIVE ENACTMENT.

I think the practice of dentistry ought to be legalized in this State. I look upon that as the most important step in advance. If every State in the Union, or the General Government, if you please, should limit the practice of medicine and its collateral branches, dentistry being one, to those only who had degrees, or certificates from regularly authorized colleges for the development and perpetuity of that branch of knowledge, the standard of professional educational would advance ten fold, and thus the physical well-being of the American people, who intrust their lives and health to the profession, would be enhanced in the same ratio. A member of the legal fraternity will say: yes, one has said the State *can* do it, but the General Government *cannot*." I said, " it could if it *would*." " Yes, but it was not likely that it would, for it would have to amend the Constitution." Now, the National Constitution has been amended three times in twenty years, and in that time, the United States has expended three thousand millions of dollars in war, and crimsoned her soil with blood by a sacrifice of five hundred thousand valuable lives, and her crippled patriots are legion. And still, we are told the general government can do nothing for the protection of the people!

A sign, " bearing for its motto the miserable delusion," " Dr." or " Dentist," means *nothing*. In other words, it means simply

that he is practicing medicine or dentistry, as the case may be. But when you see the title of "M.D.," or "D.D.S.," used legally, it is evidence that the party has taken *some* steps towards qualifying himself; has contributed something toward education and in favor of educational institutions. Of course it has, and will be said, "going to a dental or medical college does not make a good dentist." Will not the same opponent of these views, in favor of education, be candid, forget himself, for the moment, and say: "That as inferior as the young graduate may be to the man who through long years of close application and hard study has made his mark, that he is not *better* for having taken his collegiate course?" We know that in this city there are some men who have *not* taken the collegiate course, and are better operators, and perhaps better dentists, than *some* of those who have.

But are we not prepared to say that the close observer of mechanical principles, of causes and effects, may not be much improved by a reasonable scholarship under didactic teaching upon the fundamental principles of medicine and its collateral branches?

If we do not take this ground, why should we claim our art to be a profession?

I should have to declare it to be a misnomer. In my opinion it would be a prostitution of a long cherished and noble English word.

Only yesterday, a friend of mind from Rhode Island, said, that a short time ago he knew of two young men who bargained with a dentist in his native town, to teach them all he could in one week. The dentist did so, and at the end of six days the young men went West, and entered practice. Now it is not necessary to go away from home for such instances; we have plenty of them under our own observation. And still we find men in the Legislature and in the profession who oppose legislative prohibition, when they are aware of the existence of such a state of loose practices. If I desire to be popular, I would advocate the opposite, if I advocated any side at all. But I receive more satisfaction in being with a minority on the right side of this subject, than I should with the unthinking majority on the wrong side. I have also the satisfaction of saying that my present position on this subject is consistent with my past attitude. The records will show that the first report that was made before this Associatien on dental education, was make by myself; and in it I embodied the same sentiment as herein expressed.

I know there are men who oppose such a law because there is no dental college in our midst, to encourage and assist in elevating the standard of dental education.

But pardon me if I characterize this argument as unsound. The University of Michigan has a Dental Department—one of the most thorough in the country; and out of 360 practitioners of dentistry in that State, there are only thirty-three graduates. And why? Simply because there is a popular sentiment against legislative enactment on this subject.

There are several reasons why there is not a general law of this nature. The first, and perhaps the greatest fault, is in the people, represented in the Assembly. They cannot comprehend that which they do not understand.

I think that it has been said that a Nation reflects the character of the people; and so a Legislature reflects the sentiment of its constituents. When I was in the East. I was told that one man, who was not a graduate, defeated a Bill before the Legislature for the regulation of the practice of dentistry in his State. And he boasted that, in addition to means more disreputable, he did it by advocating that such a law would be oppressive, and a violation or infringement of the liberties of the people. And when the friends of the Bill were asked why they did not "lobby" for it—and I asked the same question—they justly said: "If the people showed no desire to be helped, they would "not force their assistance upon them." There are also those who oppose the passage of such a law from business or mercenary motives; and it is not uncommon to hear the remark, that "people like to be humbugged." Now, while this is seemingly true, it is not literally so; for they are not aware, what we so well know, that one-half of our profession keeps the other half busy.

Now, in this, our effort for a better education of our profession, shall we not have the support of the Press? Scientific men, generally, complain that the Press pays but little attention to their deliberations.

The proprietors of newspapers understand their business as well as any other class of men. And when they devote nearly a whole copy, or number, to a horse race, and only a small portion of a column to the report of a scientific meeting, it may not be a matter of choice, but a mere business necessity.

One of the greatest difficulties in the way of the passage of a law for the regulation of the practice of dentistry, is the fear of the enactment of *ex-post facto* laws, against those now in practice.

Such laws are decidedly unconstitutional by the highest authority; and I have no doubt every member of our Association would oppose such a law. For my own part, I am most decidedly opposed to any such retrospective law.

But when a Bill, or Act, is introduced into the Legislature that shall affect only those who will not avail themselves of the opportunities of a higher professional education, or who seek an asylum among us from the effect of similar laws in other States, I shall favor its enactment; and I am unable to see why a law of such prospective beneficial results should not have the support of the Profession, the Press, and the People, whom it is designed to benefit.

EDUCATION.

Whatever difference of opinion there may be among us upon minor questions, we ought not to differ much upon this. No one feels the value of an education so much as the students of nature, who have a view of the promised land, and cannot reach it. And none value it so little as those who have had the opportunity of an early education thrust upon them, and have not had the energy and industry to apply it to the solution of the problems of life. Too few obtain knowledge for the sake and love of it—more particularly when it yields no immediate results; and many are too much interested in making a good showing of what they have; and such habits of life may be termed intellectual economy, instead of intellectual growth. Thomas Starr King says: "The preparatory school, and the "college, lay the basis of the power and the satisfaction with "which, in after years, the work of life will be discharged. "Young men do not go to college to complete their education, "but to draw the ground-plan of it, and to lay the under-"courses of a future building, deep, and firm. To use the "words of St. Paul, in a secular sense, they are there, laying "up for themselves a good foundation against the time to "come. And the years are profitably used just to the extent "that habits of mental industry are formed, loyalty to truth "confirmed, and the principles which underlie and support "knowledge and culture, are laid and cemented imperishably "by the masonry of application. Nobody can become wise "in the best college on this planet, between twelve and twenty. "But a youth of capacious powers can do more in those years "toward enlarging the resources, and ennobling the proportions "of his mental character and influence, than in twice eight

" years after he shall have taken up the task of life. It is no " time to look to the lower tiers of the edifice after the rafters " are up and the roof is on. It is no time to be attending to a crack " in the basement, or a leaning wall, after the builder has moved " into the house with his family. The best he can do is to " move out of it and buy another, and spend largely to have " it put in friendship with mathematics and gravitation. But " a student cannot remove from his mental house, in his busy " years, although he may see that the ground tier of the stone " is not based right, and that the walls are not thick enough " for the weight they must bear. And then the misery that " comes ! To feel the need of fundamental instruction, which " might have once been thoroughly acquired, while the mind " must act, and in reprehensible callings, too, as though it felt " secure ! To be under the necessity of being student and " worker, journeyman and artist, in the same hour, without the " satisfaction that belong to either branch of toil, and with the " burthen of practical, and perhaps, very important duty upon " the hands, and conscience — this is a species of refined and " exquisite agony which many a professional man in our day " experiences, and which is the penalty either of an enforced " adoption of the duties of a profession without ample prepara- " tion, or of wasted academic hours."

The old adage, that " Necessity is the mother of invention," is applicable to our department of Medical Science.

In the incipiency of the diseases of the dental organs, and the profession, any one could, and was allowed to enter it— the profession, so-called — and practice ; but now that the opportunities are so great for something more than the empirical knowledge, should they not be required to have it, even though it may not be all that could be desired ?

I would have every practitioner of dentistry after this date, a graduate, and then all the quackery, if any, would be confined to *them.* The standard would be elevated, or there would be a higher plane than at present. As it is now, the graduate has the advantage of the non-graduate, because the degree of M.D., or D.D.S., is *prima facie* evidence of qualification ; and, all things being equal, the community would seek the services of the former, and not the latter.

The time will never come, however, when there will not be two extremes ; when the degree of natural and acquired qualification are so equalized that people will not have to seek other evidences of worth—those of professional integrity, culture, and character.

The distinction that has been drawn between titles, has provoked many warm discussions as to how much one ought to know to be a dentist; and this brings me to a brief consideration of the "new departure."

I am of the opinion that those who are satisfied with the D.D.S., and think it enough; also, those who pride themselves on having both M.D. and D.D.S., making the M.D. secondary, are quite right, quite consistent in their ideas of dental education—*if, to insert a good, plastic filling, is their highest ambition*—and, in some cases, it really seems to be. Where our profession comes down from its lofty, and eminently glorious position, to the general use of vulcanized rubber as a base for artificial dentures; plastic fillings for the treatment of dental caries—then what? What degree shall we require? I shall be in favor of originating a new one—to be engraved on the tombstone of our profession. For half, if not a whole century, our profession, or specialty, has been steadily moving onward and upward. A comparison of its literature and art, would reveal the most unmistakable evidence and proof of our gradual growth.

If there is any one thing in which Americans are prominent abroad, it is in their dental skill.

As much as the Royal families may desire to encourage home art, home culture, and home industry, if not to say home superiority, they have looked on this side of the Atlantic, and to America, for the highest degree of perfection in our specialty.

And are we now to turn, to descend from our lofty position, stultify ourselves, our words and actions? Must we imitiate "the scorpion, which, seeing no means of escape, stings itself "to death?"

And have we attained this distinction by plastic fillings? Most emphatically, No!

I am glad to be able to say that I have not advocated exclusive methods, as I may say that many others of my co-laborers have not; and I have never been a supporter of these wild vagaries. And I am as glad to say that we have made a national reputation, if no more, through our high degree of artistic excellence—and not by plastic fillings.

Good dentistry means industry, intelligence, and skill; *bad* dentistry means indolence, ignorance, and avarice. What has been said of "language," will apply, also, to every department of life.

"Whatever loses the vital principle of renovation and

growth, tends to decay;" and if mere copyists, compilers, abridgers and modifiers be encouraged, as they now are, language surely will not be improved. Style is liable to be antiquated by time, corrupted by innovation, debased by ignorance, perverted by consent, impaired by negligence, and vitiated by caprice; and nothing but the living spirit of true authorship, and the application of *just* criticism, can counteract the natural tendency of these causes.

I will quote Prof. Lionel Beale, to show the danger of accepting *authority* for *fact:*

"Sufficient distinction has not, I think, been drawn by "many between science and the statements put forward in her "name; between scientific demonstration, and facts said to "have been demonstrated by investigations called scientific; "between the actual discovery of new truths, proved beyond "all question, and mere assertions, sufficiently dogmatic, dictatorial and positive, but resting upon authority instead of "upon evidence.

"Authoritative assertion damages the interests of science, "and arrests the progress of truth; for science can never "acknowledge any authority whatever. Her truth rests "simply upon evidence; and the more carefully and the more "minutely the evidence is sifted, the greater is the gain to "science. Unfortuately, however, in every stage of scientific "progress, instances are not wanting in which mere positive "assertions have been implicitly believed, and when these "have been proved to be erroneous, new assertions as positive "have taken their places, to be in their turn refuted, and replaced by others. And this must ever be, if people persist "in accepting scientific statements upon authority alone, and "refuse to study the grounds upon which the statements are "said to rest."

In conclusion, permit me to beg your pardon for detaining you so long, and allow me to give you the extract from Tyndal to which I alluded in the early part of my remarks:

"And now the end is come. With more time, or greater "strength and knowledge, what has been here said might have "been better said, while worthy matters, here omitted, might "have received fit expression. But there would have been no "material deviation from the views set forth. As regards "myself they are not the growth of a day; and as regards "you, I thought you ought to know the environment which,

" with or without your consent, is rapidly surrounding you, " and in relation to which some adjustment on your part may " be necessary. A hint of Hamlet's, however, teaches us all " how the troubles of common life may be ended; and it is " perfectly possible for you and me to purchase intellectual " peace at the price of intellectual death. The world is not " without refuges of this description; nor is it wanting in " persons who seek their shelter, and try to persuade others to " do the same. I would exhort you to refuse such shelter, " and to scorn such base repose; to accept, if the choice be " forced upon you, commotion before stagnation, the leap of " the torrent before the stillness of the swamp. In the one, " there is, at all events, *life*, and, therefore, *hope*; in the other, " none."

REPORT OF COMMITTEE

ON

DENTAL LITERATURE AND EDUCATION.

BY A. F. M'LAIN, M.D., D.D.S.

A distrust in the efficiency of and thoroughness of the instruction, as obtained in dental collegiate institutions seems of late to be gaining ground in the minds of some of our leading dental practitioners in this country.

The importance which dental surgery has assumed as an art and science naturally elicits the inquiry, from those most interested in the advancement of the profession, whether the methods or means employed by dental colleges in imparting knowledge in this branch of the healing art are the best calculated to promote that degree of perfection which this age of progress demands.

That imperfections do exist in dental education, no one at all conversant with the subject will attempt to deny; for observation proves that by far the largest proportion of those who embrace the profession have been so limited in their educational training, as not only to cast reproach upon dentistry, but is actually causing, through consequent ignorance, serious harm to many persons who come under their hands for "dental treatment."

This lack of confidence in the competency of college graduates has probably grown out of a common belief that gradution in these institutions has been made too easy, and that in thus arming them with credentials, which are usually regarded

as a mark of some ability, has, in consequence, lowered the professional standard to a corresponding degree.

The rapid advancement the profession has made in the fields of art and science, has rendered, at present, a higher order of acquirements necessary to its members. Hence, the character and the educational culture of those who propose to enter within its fold are of paramount importance to the profession, being essential conditions upon which its future status depends. Dental colleges, therefore, are naturally looked upon as being the legitimate source or medium for that systematic course of discipline and training of their pupils which should elevate them to that plane of excellence which is so desirable, and which is in perfect accord with the progressive spirit of the age.

The accusation brought against these institutions, of not exacting better qualifications, such as are naturally expected in their graduates, is not entirely without foundation; but the evil complained of, if properly investigated, would be found to arise from causes whose origin antedate and are independent of the curricula of the colleges.

A fact which cannot be controverted is, that the largest proportion of applicants for admission into dental colleges, not excepting private pupils of reputable practitioners, are greatly deficient in the elementary knowledge of dental surgery. Hence, through this low standard of previous educational preparation in students, these collegiate institutions, in order to obtain the best possible results, are impelled to adopt rather rudimentary courses of instruction, which would not otherwise be the case were they to come with higher attainments.

Those who have had the management of dental colleges, have not failed to observe the frequency with which they are importuned by persons who have never had the advantages of preliminary instruction, perhaps have enjoyed only a few month's experience as private pupils, asking to be allowed to graduate in a single session; some going even further, by desiring to have diplomas awarded them wholly in *absentia*.

Now, this comes, in a great measure, from a prevailing characteristic of the American people, which, however, exists to some extent in other nationalities, in desiring to obtain something rather than to be something. It constitutes a special danger to the body politic in many respects, but more particularly in its effects as it regards the future status of dentistry. This all pervading desire to gain place and rank, without reference to fitness or previous preparation for adapting them

to the career which they propose to follow, is a prominent feature in the average, it might be said, in the generality of dental students, thus reversing the natural order, by presupposing that success in any vocation is due more to opportunity than to proper training and discipline.

Without the least intention of offering a plea for the shortcomings of dental collegiate institutions, I must say that a close inspection into their inner workings will reveal the fact, that they have in no wise deteriorated in the quality or retrograded in the modes of teaching; but the charge of inefficiency made against them is not entirely groundless; for they have been remiss, if in nothing less than by failing to keep pace in the elevation of the standard of professional education proportionately with the wider range and the greater depths which dental surgery, as a specialty of medicine, has taken in the domain of science.

A cause of defective dental education in this country may be traced to the usual practice which obtains of entrusting final examinations to the professors exclusively, instead of being conducted by disinterested boards, whose sympathies had not been enlisted in favor of the candidates through familiarity that had been engendered by long intercourse. Such constant intercourse as exists between teacher and student naturally begets in the former, who knows all the strong or weak points in the latter, a species of leniency which tends to relax the rigidness of an examination, and thus prove subversive of the just ends for which this formality is designed to promote.

Another defect in college teachings, one which, no doubt, gives the most cause for dissatisfaction, is attributable to the common custom, which obtains in most dental colleges, of graduating students on a minimum attendance of two short sessions, aggregating in duration only eight months of actual methodical studies, a period of time, it must be admitted, entirely too brief for the most receptive mind to be able to master even the ordinary mechanical arts, much less to be familiarized with the theoretical or scientific departments of dental surgery, besides acquiring a passable degree of manipulative skill. For, in the mechanic's art, wherein the executive talents are those which are mostly cultivated, an apprenticeship of two whole consecutive years is usually deemed inadequate for rendering one a competent workman. Then how utterly futile is it to expect dental students to excel in the

practice of a profession which requires an acquaintanceship with several obtruse scientific subjects, as well as acquiring a high order of artistic ability.

Taking into consideration, therefore, the almost totally unprepared condition in which the majority of dental students present themselves at these schools, having little, if any, just conception of the scope or the drift of the studies appertaining to dental science, the wonder is that so many short-term graduates, so to speak, ever attain any more than mere mediocrity in the practice of the profession.

Fortunately, however, the versatile genius of the American people, a genius to which no doubt much of that rapid progress dental surgery has made in this country is due, has in a great measure compensated for this deficiency in preliminary education.

But, the greatest injury to the profession comes from those —and they are legion—who enter into its sacred precincts, through the open door of "*empiricism*," thus filling the ranks to repletion with a class of men who are totally lacking in all those qualifications which should distinguish the true "dental surgeon."

Although the college graduate may fall short of the mark of a proper standard, and he has at least in his favor over the one who has come in irregularly, an advantage of having had the foundation of his professional education laid in science; neither should it be forgotten by those who are disposed to criticise these institutions, that through them the first impetus to dental education was given, and that, by their continued efforts, aided, it is true, by the general information, disseminated by means of the press, as well as through that powerful influence which comes from the associated action of the various dental conventions, the profession has reached the advanced position it now enjoys.

Statutory enactments have been suggested as a proper means for correcting the evils of defective dental education; but they would prove ineffectual so far as regards the enlargement of the sphere of usefulness in dental colleges, or in improving their modes of teaching as they are at present constituted and influenced in their conduct. Laws regulating the practice of dental surgery would prove salutary, however, by shutting out from its ranks those grosser and more reprehensible elements: ignorance and charlatanism, and thus elevate the profession to a higher status.

Another cause of the disfavor which is being manifested in

some quarters toward dental colleges, is due to the fact, that whilst the style of dental literature has become more elevated, and assumed a character of solidity, and, the members of the profession in the mean time, stimulated doubtlessly by personal ambition and imbued with a spirit of inquiry, have gone steadily on in the march of improvement, these institutions have shown no disposition to change from the old ruts, but have continued instructing their pupils by the same symptoms or methods they had pursued in their earlier days, when the requirements for the successful practice of dental surgery were few and of a simple nature, necessitating the possession more of mechanical ability than a knowledge of science.

This *statu quo* in dental institutions of learning, arises evidently from a constant multiplication of their number, none of which being pecuniarily remunerative to their projectors, induces a species of rivalry for patronage, that leads them perforce, to adopt questionable means for attracting pupils to their respective establishments which naturally tends to a laxity in discipline and a consequent lowering in educational requirements.

Under these circumstances, it is unreasonable to expect that dental colleges would take the initiative in the adoption of reformatory measures in their own conduct; measures, however desirable they might be for the elevation of a professional standard, when by so doing they would be acting against their pecuniary interests, if not actually jeopardizing their existences. This was verified in an instance where a dental college with which your lecturer had the honor of being connected with its management, was made to suffer in its finances from having raised the curriculum. In consequence, the first year after the adoption of this course, the class fell off one-third; the next, one-half, and at each succeeding session this ratio of diminution continued, until the attendance became reduced to merely a fraction of what it had been at the inauguration of the school, ten years previously.

The question which naturally occurs here, are there not too many dental colleges in this country for them all to receive such a support as would place them in an independent position so that the well-being of the profession might be advanced without detriment to themselves? There are now in full operation ten or more of these institutions which turn out in the aggregate from two hundred and fifty to three hundred graduates every year; and when it is considered that more than double that number are coming in from illegitimate

sources annually, it will be seen how such an unprecedently rapid increase in dental practitioners must eventually produce the most injurious effect on the standing of the profession as well as in a financial point of view, particularly should, to the already overcrowded condition that exists, this overwhelming ingress into the ranks, be continued indefinitely. Dentists literally swarm like bees all over the land, especially here in California, where the ratio of practitioners, with a few exceptional localities, is as one to every one thousand or twelve hundred of population. Now, so long as large numbers of partially cultured persons, with a still larger proportion who have had no advantages from previous training are permitted to enter into the professional field, just so long will dental surgery fail to meet from the allied sciences, or other learned professions, that recognition which many of us are anxious to obtain.

The solicitude which is being felt in reference to the subject of dental surgery is an earnest of the accomplishment of the object desired; but reformations of any sort are necessarily of a slow growth, requiring efforts of a determined, persevering nature, in order that the end sought may be attained.

From the difficulties with which dental colleges are environed, it could hardly be required of them, as we have already observed, to be the pioneers in their own reformation. Such reformatory measures as are essential to the correction of existing evils in dental education should come, and appropriately too, from the hands of the profession itself. The most strenuous efforts, therefore, should be made by individual members to exclude, by means of legislation or otherwise, those interlopers who gain admission into it without a regular pupilage; and again, for all reputable practitioners to exercise a judicious care in the selection of their private pupils, accepting none but those who have had the advantages of a good primary education, and who manifest a natural adaptation for the vocation. Then by properly preparing them for college, their entrance thereto could be made as advanced students, which would greatly relieve these institutions from being as rudimentary as they are at present. Thus, in furnishing them with better materials wherewith to make dentists, they would be enabled, nay, insensibly compelled, to start on a higher plane, from which a greater efficiency would be imparted to their instructions, that would naturally result in giving a character of worth to their credentials not heretofore enjoyed by such instruments.

The advantage which dental colleges would derive from disconnecting final examinations for degrees from professional duties having already been discussed, it is therefore unnecessary to recapitulate. But what is needed to make these schools all that could be desired of them, would be the lengthening of their sessions to nine or twelve months' duration, instead of four, and increasing proportionately, say from three to five, the number of terms the candidates should attend in order to entitle them to graduation. Now, for properly carrying this plan into effect, it will be necessary for preceptors to require of students not less than three years' private pupilage, and at the same time to obligate them to pass through some reputable dental college, whether its curriculum calls for an attendance on three or more yearly sessions, as a *sine qua non* for graduation. Then on their side, dental colleges might demand from students on matriculating, a preliminary examination in order to judge of the proficiency they had already attained. Furthermore, a diminution in the number of these dental collegiate institutions should be made either by coalescing or by actual suspension, where there are two or more in any one city, State, or neighboring States. Such an union has recently taken place between the old Baltimore and the Maryland dental colleges, both of which were in the city of Baltimore. This example might be profitably imitated in other places. Three or four at most, established at points convenient of access, as for instance, to locate one in an Eastern State, one in a Middle State, one in the South, as at Baltimore, and the other in the West, either at Cincinnati or St. Louis, as might be the case. These four institutions, when properly provided with the necessary apparatuses and other equipments essential to a thorough course of instruction in dental surgery and in the sciences tributary thereto, would suffice for supplying all the needs of the whole country in the way of dental operators. Besides, such a reduction would not only serve to lessen the competition which has arisen for maintaining their separate existences, and which has lowered the standard of acquirements, both in students and in graduation, through the attractions they offer, but it would enable them to employ the highest order of professorial talent the country affords, at such remunerative salaries as to justify them in devoting their whole time and energies to the business of teaching.

With all due deference to the opinion or desires of some members of this Association, your lecturer sees no necessity for the establishment of a dental college on this coast, for

those persons so imbued with the desire of becoming dentists, and who have the necessary qualities for the specialty, will certainly be possessed of sufficient energy to overcome any difficulties or obstacles that may present themselves through the absence of home facilities in the way of a college. And, to those who want a dental college in our midst merely from personal ambition for place, they can have that ambition easily satisfied, by simply applying to the occupants of professorial chairs, who, no doubt, would gladly relinquish in favor of these aspirants, all the honors as well as the responsibilities — responsibilities, be it understood, which in almost every case are borne entirely without renumeration, unless the *glory* (?) derived therefrom be considered a compensation.

A profession which has already an overplus of votaries, with constantly fresh accessions to its ranks being made, it is difficult to understand wherein its material interests or in what manner its standing can be advanced through the organization of a college, especially in the State of California.

If dental education has not progressed as satisfactorily as might have been expected, or desired, the improvement that has been made in dental literature within the past decade, more than compensates for such a failure. The attentive observer cannot have failed to note the very marked beneficial change it has undergone during that time—the contributions to dental science having gained in terseness, force, style and solidity of character.

In conclusion, it is well to add, that if the cause of *dental education* has made any progress in late years, it may be credited to those frequent reunions of the dental fraternity which have become very common in the United States, and to the aid which an improved literature has afforded. Associated efforts, such as are now being exercised right here, acting conjointly with the *Press*, must be regarded as the real propulsive force which is moving our beloved profession in its onward march to a manifest destiny of perfection; hence, it is needless to waste our energies in organizing institutions with which we are already oversupplied, seeking thereby for doubtful benefits, when we have surer and more efficacious means at our command.

Dr. Robinson: I agree with pretty much all that Dr. McLain has said in his paper just read. I believe every word that he says in relation to the benefit of Dental Colleges. But, when we come to legislation, we all agree that the objects

sought by legislation are desirable; and then the grave question comes in, do we get them by legislation? Every dentist ought to be a good dentist, but legislation would not make him so. I believe that if there be any place in the world where legislation would be justifiable, it is California; because men who are driven from other States by laws, here find your doors open to them, and we are getting the scum of creation. And, while I have usually been opposed to dental legislation, I don't know as I would object to it here, if it would shut out those who are driven away from other States, on the principle of self-defense.

I think that dental colleges are a credit to our profession. And I do say this, that we have never had but one bogus one, and I have never seen a dentist in the United States that had brass enough to wear a diploma from it.

But we may legislate as we please, and yet, as Burns has said, "The rank is but a guinea stamp, a man's a man for a' that." I believe no man ought to be a dentist without going through a dental college. And I know that one of the most degrading influences upon the standing of the profession is the practice of making dentists out of office boys. Three-quarters of all the dentists that come into the profession are office boys. The boy is, perhaps, unable to go to school; he applies to some dentist to take him into his office simply as an office boy. About that time the dentist is doing well; his business is building up, and the boy says, "you are getting rich;" and before you have any idea of it, that boy is settled in his mind, just as certain as he lives, that he will be a dentist. If he had come to you when you were commencing, and had but few patients, he would not have been enraptured. He remains there; you let him see you fill, and he beats for you; and the first you know he is a dentist. He came there without any of the capacity or instruction that the dental school imparts. We are flooding the whole United States, and the profession, with the worst class of dentists that have ever been brought into it. There is not any one thing to-day that is lowering us, in that respect, so much as such employment of office boys, and the most of us are guilty of it. Do you do the poor boy justice when you bring him into the profession in that way?

The profession is always getting higher and higher, and I feel prouder to-day that I am a dentist than ever before. But some of these things, I say, are wrong, and we ought to be the very ones to correct them. I don't know what we are going to do about it—only to talk.

REFLEX INFLUENCE OF DENTAL ASSOCIATIONS AND COLLEGES ON THE PROFESSION.

BY W. H. ROBINSON.

Dental associations and colleges are not something outside of the profession. They are the profession; not all of it, but an essential part.

We had dentists before we had either associations or schools in any systematized or legal form. But the dental profession never did or could exist without schools and intercourse that embraced the fundamental ideas that underlie our colleges and associations.

Wherever and whenever two or more dentists exchanged views and opinions, whether in social chit-chat, or in private or public correspondence, there you find the embryo college and association.

Take the highest type of manipulatory execution of to-day, as seen in some beautiful contour restoration, and study its pedigree, (or, as Darwin would put it, its natural descent) and you find Dr. Jackson, of Boston, torturing gold till he produces a spongy mass, with which he instructs a brother dentist to fill his tooth on the adhesive principle. One hundred years before some radical made a new departure and stuffed a tooth with gold, he being the lineal descendant of the plugger with lead, and he of the Egyptian mummy who, when conscious of pain, stuffed a rag in his tooth to keep the cold out. Take the most complete associational organization of to-day, and it is the developed embodyment of the resolution of Drs. Hayden and Harris, expressed in 1840 in the formation of the first dental association that had a corps of officers and a written constitution and laws for its government. And this is the legitimate child of kindred spirits who, during all the time dentists had existed, were wont to assemble in social groups

to talk over professional matters, relate their experience and take lessons from each other's success and failures.

We may even go two thousand years back, and we hear Drs. Herophilos and Erasistratos talking about "hodontagri" (forceps) and "hodontagogon" (extraction), and expressing the conviction that no instrument could he made that would take out solid molars without breaking the jaw. These men and their associates, in assemblies as large as we are to-day, taught and discussed some of the principles of dental science. Ten thousand little springs send forth their tiny rivulets. These unite to form the thousand babbling brooks, and these the hundred mountain streams that make the one noble river. We cannot separate the river into streams, brooks, rivulets or springs. It is majestic unity.

So the dental profession is not associations, colleges, literature, skillful mechanism, or scientific manipulation. It is all of these. And as each stream gives character of purity or putridity to the river, so these tend to elevate or debase the profession.

Teaching and discussing imply schools and associations in some form. These forms change, but the principles, of which they are the exponent, are co-existant with our intelligence.

In the days when our profession was younger, the mass of dentists regarded the few ideas they possessed as private property, or as their stock in trade, and guarded them with bigoted privacy. This idea had such influence over the masses of dentists, even as late as thirty years ago, that there could be no honest or free exchange of views among them. The tendencies and teachings of antecedent times had been that dentistry consisted of a few receipts and secret modes of mechanism that a few weeks instruction could impart. Of course men who came into the profession through such schools as these were usually as ignorant and bigoted as their tutors. The result was, we had hosts of so-called dentists too ignorant to comprehend scientific ideas, and, of course, they had none to impart to the ignorant dupes whom they induced to pay them from $10 to $200 to be inducted into the art, secrets and modes of dentistry. These quasi preceptors agreeing and pretending to do this in a few days or weeks. Teacher actually thinking he did do this and pupils believing it was done. It would have required but a short session of a dental association for this class to have told all they knew.

There was also another class, more intelligent and liberally disposed, who feared that if dental knowledge was made free

and public, it would injure the profession by enabling all who chose to become dentists, no matter how incompetent. While the kind of dentist I have referred to were numerically in the majority, they were not its architects; they could not guide or control it. There always was a class on the upper shelf, men of fine culture and true attainments, far in advance of their age. These had acquired knowledge freely, and freely they dispensed it. They were the fathers of our colleges and associations. Pupils that sought admission to the profession under their instruction, were told that they required intelligence and adaptation to start with, and then not only imparted to their students sound instruction, but a noble enthusiasm that tended to make them true men as well as competent dentists and shrewd investigators. There is no doubt but that thorough private instruction could qualify a student for practical dentistry as well or better than the average college, but the tendency was the other way. The charlatan's few weeks instruction and low fees suited the average aspirant for professional honors much better than the terms of the true dentist. So that the numerical majority of those who became dentists received but little instruction and that little was erroneous as to practice, and as to ethics or progress, fundamentally wrong.

Seventeen years ago the writer was practicing dentistry in a far-off Eastern town, with a population of about 3,000 inhabitants, besides the thickly-settled farming country and numerous villages that were tributary to it. We were the only dentists there and could do all the business and have five or six days in the week to rest. One day there entered our sanctum a big, gawky boy, and asked us what we would take, and teach him to be a dentist. We had plenty of time to chat with him and draw out his nobler aspirations. I suppose I gave him about such advice as most of you would: first learn to write his own name, then a few years in a dental office and a course in college would give him a start. Surprise and astonishment are no name for the cerebral excitation that expanded his occular and oral cavities as he said, "Dr. Quacker, who pulled a tooth for Dad last week, said he teached fellows like me to be good dentists in six weeks for $50, and Dad sent me to see if you wouldn't do it for $25." We left that part of the country and came West. That boy and his would-be preceptor represent the dental college and pupil of that section, and few of the people knew of any other class of den-

tists. They regarded the average dentist and his operations about as reliable as we do the effusions of the fortune-teller.

The lowest production of the lowest dental college may be far behind the intelligence of the age, but he and his alma mater are a decided advance over Dr. Quacker's tramping school that "teached" its pupils in six weeks. Take the dozen of dental colleges just as they are and just as they have been, with all their defects, and they are something of which the profession may well feel proud. They are healthful centres of light and knowledge. Their influence has permeated the whole profession and given it an impulse in the right direction. Not only in our own country is their influence felt; all the civilized countries of earth pay tribute to their genius. Our average D. D. S. is not always a cherup or savant; he is sometimes an illiterate clown and common charlatan. But the average is good, and the 3,000 D. D. S.'s of our American colleges are a credit to the profession and their alma maters. Throughout the civilized world the practical attainments and professional skill of the American D. D. S. give him rank and standing as a dentist.

We can say, to our credit as a profession, that we have never had but one bogus so-called college (the St. Louis Dental College). If that ever sold any degrees we have never had a man in our profession that was ass enough or had brass enough to wear its badge. Our dental schools are far from perfection. But, all things considered, and taking them altogether, they come nearer the true ideal of their kind than our other professional schools have ever attained.

Our colleges, like our literature and practice, are a part of our natural growth and development. The impulse that brought them into being was a generous one. There was nothing selfish in the profession establishing and maintaining these portals and then saying to the coming dentists: "Gentlemen, these are our doors; if you want to come into the profession come in an honorable way. Our college halls are open to you. They are our front doors, come in through them; don't sneak in through some back door." Private tuition, even when imparted by the best men in the profession, tended to make the student run in the ruts of his preceptor; but when, as it often happened, the preceptor was an ignorant charlatan, then the direct result of his instruction was moral, professional and intellectual degradation. This kind of teaching made ignorant bigots, where our present system would make accomplished gentlemen and dentists. Contact with men of

true culture and attainments, liberal minds and pure lives, is not the least important part of a student's education. Like teacher, like scholar, is a truism. Then how much has the profession gained by bringing those who come into it in contact with our noblest and best men, to receive from them those instructions and inspirations that give character to their future professional career? Our colleges are noble and enduring monuments, indicating a healthy, vigorous growth in professional and scientific culture. They are our creatures, our "operations"; they are just what we make them. So long as the profession throws around them that nurturing care that will keep in their chairs faculties possessing true manhood and sound mental and scientific attainments, our schools will be our true exponents, and pay back to the profession, with interest, all we give them. But should we neglect those we have and recognize others so low as to be mere caricatures on the name of college, we would soon have schools as degrading as the M. D. mills that sell sheepskins to jackasses for the price of a bag of wool. Still, the genius of the profession would be upward and onward. Noble individual manhood is the basic principle on which true professionalism is founded. Those higher attainments in mental, scientific and manual culture, exemplified by noble manhood and true integrity, that elevates the profession to that position where it merits and receives the respect of an intelligent age and people, is due to the individual worth of every man who bears the name of dentist.

Dental associations are more widespread than colleges. They are a home institution, coming directly within the reach of the mass of the profession. They are our common schools, where we can all be teachers and pupils. History will enroll high among our professional benefactors the orignators of dental associations. And the names of Drs. Hayden and Harris stand on the record as the movers of the resolution that gave birth to the "American Society of Dental Surgeons." These men and their coadjutors had a burning enthusiasm to elevate the profession and free it from the barnacles and parasites that degraded it. Their disgust for the ignorant charlatans that had been "*teached*" dentistry in a few weeks knew no bounds, and for this we give them due credit. Their fatal mistake was that, in drawing the lines between quackery and true professionalism, they drew them so close that they soon found themselves in a blue-law pen, too small for growth or development. The use of amalgam was declared malpractice. Not only were

all those who used it excluded, but all those who would not pledge themselves not to use it. They went so far as to declare that holding an opinion that the use of amalgam was admissible in some cases was professional heresy which should exclude the offender from their society. Arbitrary laws have killed more dental associations than all other agencies combined, and their enforcement the bone of contention that has prostituted them to personal wrangling. Our associations have grown not only in numbers and influence, but in wisdom. Now it is quite well understood that the diffusion of knowledge and the inculcation of sound principles is what elevates the profession, not the discussion or enforcement of arbitrary codes.

Our associations are such a moral force, and their influence so wholesome that they have a strong tendency to elevate their members above the degrading practices their ethics condemn. The whole genius of our associations is to stimulate in the right direction. Our colleges are our preparatory school. Our associations the ever-advancing school we can all attend and receive and impart those matured lessons that can only be acquired in years of practical experience. They stimulate to effort, research and experiments, and give proper and desirable opportunities for the publicity and exhibition of the results. They are the sources from which emanate three-fourths of our live, practical literature; and in many cases induced the personal effort that produced it. All you who now hear me can bear witness to the great benefit we receive in the preparation of our essays; as we have ransacked the musty corners of our libraries, brains and experience, we have cleaned out a great many cobwebs and filled their places with newer and better ideas. Our papers, at least, have interested and instructed ourselves.

The social influence of the Association is a great good. It does us all good to see each other; shake hands with each, and enjoy a social chat. Here, all can sing:

"Blest be the tie that binds
Our hearts in mutual love;
The fellowship of kindred minds
Is like to that above.
We share each other's woe;
Our mutual burdens bear;
And sometimes for each other go,
Like the bulldog for the bear."

And yet the Association is the great healer of personal animosities and jealousies. Here we see and hear each other just

as we are. Most of us, in our public efforts, feel we need charity and sympathy, full as much as criticism; and this may lead us to bestow more of these Heaven-born graces on others.

* * * * * *

Let us divide the profession into two classes—those who are the regular attendants of our Associations, and those who are not. Now, take a fair, impartial look. We make no invidious comparisons. We simply call your attention to the two classes into which the members of the dental profession have, of their own free choice, divided themselves; and say, look on *this* picture, and then on *that*. As a rule, with few exceptions, the charlatans, bilks and botches, that hang round the ragged edges of the profession, keep as far as possible from the Associations; their free ventilation would purify the stale atmosphere in which they live, move, and have their being. They cherish the putrid odor of charlatan ignorance, as the Chinaman does the stench of his dormitory. But the rays of light and influence that emanates from Associations, penetrates even the iron armor of isolation and ignorance in which this class enclose themselves.

We do most heartily endorse our Associational clinics. They have been and are, true educators. They enable us to see the practical execution of our best operators; and to have for our teachers, those whose minds and muscles are disciplined to accurate perception and artistic manipulation. Their dextrous modes and brilliant results kindle in us a new enthusiasm that leads to noble emulation. They place before us a practical ideal, and give to all a cordial invitation to equal or excel it.

We may all gather useful lessons from our equals, or even our inferiors, as to modes of application and details in execution. Our clinical demonstrations are too restricted. They have given none too much prominence to the principles and manipulations of plug construction. But other very important branches have been woefully neglected. We need a new departure right here. Supposing, that in addition to our operations in filling, we had some practical demonstrations in analysis of oral secretions and the practical application of these principles in their various relations to filling materials and tooth structure; and that some of our dextrous experimentors would give demonstrations in testing plugs and plug materials; and so on, through the whole range of topics that admit of demonstration, before the Association. It would give an impetus to practical inquiry and investigation; infuse new life and vigor into our Associations, and give it a magnetic enthusiasm that

would draw many of our stay-at-home neighbors to our annual gatherings, and fill their heads with good ideas after we got them there. Beyond question, our Associations allow too much of their force and power to lie latent. This is specially true of ours; only one-fourth of the dentists in its territory are members; and about half of these attend. Add to this, the fact that those who do attend, act as if they were ashamed of what they do themselves, or what the other members do. So all is consigned to oblivion. If the California State Dental Association had not considerable life and vigor, it would have long ere this been in silent repose by the side of its offspring. An Association has two sources through which its influence reaches the profession — its public meetings, and the publication of its doings. It is difficult to tell through which of these channels the stronger current flows. That of the publication of its doings is certainly the most wide-spread, and reaches the class that do not attend Associational meetings.

I said before, that the profession receives three-fourths of all its literature through the Association. Our very wise professional brothers, who stay at home and elevate themselves so high that they cannot come down and mingle with the common crowd, who receive and impart knowledge through our associations, would do well to remember this fact, that they, more than any other class of dentists, are dependent on the Association for the mental pabulum that keeps them from being antiquated fogies.

Ask this class why they do not meet with their professional brothers, and they are apt to look very dignified, and inform you they are above such talk. Associations do well for the common horde; but they have advanced too far for such things. Yet they claim to keep up with the advanced minds of the profession. Some of them do. But how? Through our periodical literature. Of course, they read the dental journals; and these journals *are filled with proceedings of Associations*—the very associations they stand aloof from and despise, and which are the very source from which they receive the light and knowledge that gives them professional standing. The only class of dentists that are free from association influences are those who stay away, take no dental journals, and read none of our literature.

They are twenty years behind, and too ignorant to know it. The Association is better off without them. We will not resurrect them. "*Requiescat in pace.*" Take the 150 dentists of our coasts who stay away from our Association, and they

do not all belong to the class we have consigned to peace. We find among them, intelligent, earnest men, who, in scientific and professional culture, are inferior to none. Why are they so? What keeps them among the advanced thinkers and workers of the day? Associational Thought; Associational Work! Associational Literature!! If you do not believe this assertion, note carefully for the next year the source through which you get your advanced ideas in dental science, and you will gratefully acknowledge how much you owe the Association; and, perhaps, how much, or rather how little, you pay back.

Take the thousand of our dentists who have done most to enlighten, elevate and ennoble the profession, whose scientific investigations have taught the world, whose manipulations have been the glory of the profession, whose writings have been our standards and guides, and whose words have been our educators, and whose lives have filled us with a noble enthusiasm, and these men, it will be seen, have been the wheelhorses in our dental associations. For they have honored the dental Association as the receptacle, custodian and dispenser of their noblest thoughts and deeds. To this, our stay-at-home brothers respond: We admit all you claim about those brilliant men and the Associations in which they work, and the benefits we receive from them. But you certainly claim no such excellence for the California State Dental Association. You hide your doings as if ashamed of them. When you come up to the standard of merit possessed by our Eastern Associations, we will unite with you. The average dentist of California is the full peer of the average dentist of any State in the Union. If you pick from the 12,000 dentists of the East a few hundred who rank among the scientists of the world, and compare us with them, we admit their superiority, and are proud of their eminence; and say to you, if our Association is not up to your ideal, its doors are open, come up, gentlemen, and raise it to your higher standard! If our essays are not as brilliant, erudite and scientific as you desire, give us better ones and we will be your pupils. If our clinics are beneath your notice, do give us a chance to witness your superior operations. If our literary and æsthetical tastes are too low for you, do come among us and elevate them.

Such assumptions from those that give no aid or countenance to Associations, smacks strongly of egotistical empiricism. It would be much more becoming for these self-elevated gentlemen, instead of looking silently wise and condemning the

efforts of others, to give the world a practical example of their superiority, and the profession the benefit of their superior essays, discussions and clinics. Possibly, an actual comparison of practical efforts might show our non-associational brethren that their superiority is a pet theory of their own that needs associational ventilation; and that they and their efforts, like us and our efforts, would be considerably improved by both the direct and reflex influence of the California State Dental Association.

Influence is too weak a term to express the relation between the professions and associations. They are our truest and best educators—our common schools and advanced colleges; they are centres and radiators of our progress; the heart of our literature, that arterial streams of life and thought into every operating room and laboratory, invigorating them with thoughts rich and new, and making the practical experience and noblest efforts of the ripest heads and best hearts in the profession as free as the air of heaven.

Dr. Lane: I think this question of office boy ought not to be passed without looking it in the face. I think we are suffering at present from that very thing. It is a very convenient thing sometimes, to get a boy to come into the office for a small consideration, and assist us in the work there, and we form a friendship for him that perhaps induces us after a short time to recommend him more highly as a dentist or dental student than we really ought to. We show him favors, encourage him, and after a while give him a position that he is not really deserving of. He has not had the proper training to qualify him to take his position in the profession. I think we ought to be more conscientious and careful about encouraging boys to enter the ranks of the profession. There are many outside of those who want to work for pay, who wish to remain for a length of time in the office; who want to come in and get instructed in a few months; and who are willing to pay liberally for it. Those men in many cases are taken in and qualified, so far as they can be in a very few months, to practice dentistry; to perpetrate their frauds and mistakes upon the public. Perhaps our favor or our liking for them may encourage us to do for them what will be really in after life an injustice to him, and a decided wrong to the profession.

Dr. C. C. Knowles: The office boy is a necessity. What are we going to do with him when we get through with him?

Take him out and kill him? All of this thing puts me in mind of a little fable which I once read, when I was a boy, about an ingenious rat who felt himself greatly annoyed with a cat; and he proposed that they should put a bell on it; but none of them suggested how to do it. Now, how will you get rid of that boy? I am in sympathy with the boy, and I see no other way of avoiding the difficulty, than that some inventive genius get up a wooden one that would not go out and practice after we had got through with it.

REPORT OF COMMITTEE

ON

DENTAL HISTOLOGY AND MICROSCOPY.

BY S. E. KNOWLES, D.D.S.

GENTLEMEN :—Instead of indulging in brief comments upon all the new matter coming under my observation since our last meeting, relating to this department, it has been determined that a somewhat extended report upon a subject of much importance to us all, will be more interesting and instructive.

The magnitude, and paramount importance of the subject to be discussed, is such as to demand our most earnest attention. This, therefore, must be my apology for having departed from the orthodox path upon this occasion, which deviation, let us hope, there may be no occasion to regret.

As Chairman of the Committee on Dental Histology and Microscopy, it becomes my pleasant duty to offer for your consideration a report embodying the latest views entertained regarding the minute anatomy of the tooth tissues, and bearing directly upon the one disease with which we ought to be thoroughly familiar: dental caries. By reason of that which has been added to our literature during the past twelve months, the propriety of denominating caries a disease has been fully established, which fact it shall be my purpose to make evident to your minds, because of the overwhelming evidence to be cited, and the legitimate conclusions to be drawn therefrom, all of which will be presented later on.

In order to properly understand the subject under consideration, it will be necessary to briefly review a few of the various observations, which from time to time have been made

upon inflammation, which is best done by quoting at length the remarks made by Prof. Heitzmann, of New York, before the Odontological Society of that city.

Referring to Dr. Abbott's paper, he says: "We have just listened to a paper, which, in my judgment, is of the greatest importance.

The essential point at which Dr. Abbott arrives is that John Hunter's doctrine of the inflammatory character of caries was correct. Certainly Hunter did not prove his hypothesis, nor had he the means to do so; but, you know, one of the peculiarities of genius is that it arrives at truth by methods not dependent on the slower operations of lesser minds. Since it is settled that the tooth is a living organ, reaction against injury should be, and is, one of its properties. * * * The question, 'What is inflammation?' has occupied examining minds for years. The older observers, when examining inflamed living tissues, said the current of blood in the capillaries became slower and slower, until finally stasis in these vessels was produced.

At the same time exudation occurred, inundating the surrounding tissues. Hence they concluded that blood, blood-vessels, and exudation were the essential constituents of the inflammatory process. But, in the fifth decade of our century, Hiss succeeded in producing inflammation in the cornea of the eye. Also, in 1848, wonderful experiments were made in London by Redfern, upon the cartilage of the knee-joint of various animals.

Hutob also produced inflammation in cartilage. More recently, Cohnheim's corpuscular theory became the governing one.

It is to Stricker, of Vienna, that we owe proof that this new theory is incorrect. He has shown us that most of the former doctrines contained each its grain of truth, and that the true solution of the problem may be found in a combination of these truths. Thus, we know that for inflammatory processes we must have a tissue which contains blood-vessels; also, that the doctrine of Virchow, that the cells of these tissues finally break down and produce inflammatory elements is correct; and, finally, that in certain conditions of the inflammatory process, and particularly in suppuration, emigration of blood-corpuscles occurs. I have spent much time in the study of inflammation, using for experiment that tissue which seems to have been somewhat neglected since Redfern's time—cartilage.

I injured living cartilage with hot irons. I observed that

the uninjured portion reacted only by producing a small zone of medullary elements around the injured place; that is, the cartilage injured had been reduced to its juvenile or medullary condition. After much consideration I arrived at the conclusion that we may justly style this action of cartilage and inflammatory process; or, in other words, we may say that inflammation in its first or earliest stage—its mildest degree—consists in a reduction of tissue to its medullary condition."

Inflammation can occur only in living parts, and for this reason it has been argued that no such process could possibly take place in the hard tissues of the teeth, since it was believed that the greater part of the tooth was not rich enough in living matter to take on this condition.

Hence, the many theories which have been advanced at different times, to explain, more or less satisfactorily, the nature of caries, which theories may be epitomized thus: John Hunter, who wrote on diseases of the teeth, about one hundred years ago, thought caries was a kind of mortification, and recognized the modifying influence of vital action. Joseph Fox, 1806, had a reasonably intelligent idea of caries, for he says, that it is a process similar to caries of bone, differing only in the fact, that no sequestration of the parts takes place, because of lack of sufficiently exalted vitality. Thos. Bell, 1831, denies the similarity between it and caries of bone, and considers the term caries a misnomer; he admits, however, that it is probably inflammatory, but he did not understand inflammation as now defined. S. S. Fitch, M. D., 1835, follows Hunter and Fox in declaring that caries often commence in the substance of a tooth, between the enamel and lining membrane, but thinks it begins externally in a majority of instances, for he says, "I will not deny, and firmly believe, that, in some instances, from constitutional or local causes, decay does commence within the substance of the tooth, but I must say, with Mr. Hunter, whose acumen as to matters of observation has been seldom surpassed, that this commencement of decay occurs very rarely." Later on, however, he states that before the perforation of the pulp chamber occurs there is an external opening, "to evacuate the bony abscess." He recognizes the disease as inflammatory, the vitality of the tooth tissues as retarding decay, and chemical action as the proximate exciting agency. Paul B. Goddard, M. D., etc., 1844, writes: "It is evident, from the demonstration of the structure and vitality of the tooth, that the term caries cannot be received in the same acceptation in which it is held, when applied to bones,

where it consists of a succession of pathological changes, in which the blood-vessels of the bone play the most important part; a succession best explained by the terms inflammation and ulceration. As the ivory and enamel are not vascular, a similar, or even an analagous pathological condition cannot exist. We must, therefore, look elsewhere for the explanation of the phenomena of decay." He attributes decay to the action of acids exclusively, and not only admits the possibility of the occurrence of internal caries, but, in a very ingenious manner, accounts for the appearance of acids between the enamel and dentine, in cases in which there is no surface perforation, upon the theory of osmosis; this osmosic action having been rendered possible because of the alkaline liquor sanguinis becoming extravasated in the cavities, that he claims may exist in imperfectly developed teeth, at the line of union between the enamel and dentine. Chapin A. Harris, M. D., etc., 1858, says: "Caries of a tooth is the chemical decomposition of the earthy salts of the affected part, sometimes, but not always, accompanied by the disorganization of the animal framework of this portion of the organ."

Later on he distinctly denies that caries is a disease or is modified by vital action to the slighest extent. J. Taft, 1859, attributes decay of the teeth to the action of both acids and alkalies; the first dissolving out the mineral constituents, leaving the soft animal matrix, and the latter acting directly upon the living portion, leaving the calcareous salts in an extremely friable condition. He recognizes some agents as capable of dissolving both the organic and inorganic parts with equal facility.

He does not accept the doctrine of the modification of this process by the vitality of the tooth, but says emphatically that "The immediate cause of decay is the action of agents chemically upon the teeth." James E. Garretson, M.D., etc., 1869, says, "Caries of the teeth, allowing for differences in structure, and consequently in impressibility, is to be viewed as almost analogous to caries of bone proper, and, consequently is most scientifically treated as caries in bone is treated; in other words, dental caries is more a vital or constitutional than a local or chemical trouble; or it is chemico-vital, as syphilitic caries of bone is chemico-vital, or a scrofulous caries is chemico-vital." Again; "Caries of tooth differs from caries of common bone, only in the fact of an inability to repair by any secondary material, the injury done through the destructive influences of the disease." From this we gather that, although

the necrosed dental tissues may be removed in a variety of different ways, that the essential of caries is a disease quite similar to that which occurs in bone and is, therefore, imflammatory. Wedl, 1872, in his "Pathology of the Teeth," fails to express a decided opinion as to its cause, and regards a scientific explanation of the phenomena of caries as wanting. He claims that no true inflammation is present, but does not deny that there may be a reaction on the part of the dentine and cementum.

Leber and Rottenstein, in a monograph, published in 1873, attribute caries to the growth and development of the leptothrix, and enter into a detailed account of the manner in which this growth causes the disintegration of the various hard tissues. They also admit the disorganizing influences of acid solvents, but place chemical action in a position subordinate to the parasitic growths. Chas. Tomes, in the appendix to the edition of his father's work on "Dental Surgery," published in 1873, denies in toto that caries is a disease and holds that vital action has not the least influence in retarding the progress of this process, and ascribes the wasting principally to solvent acids.

Salter, 1875, recognizes caries as largely a chemical process, although he states that vitality may modify it. He considers that true caries may be produced in teeth of replacement, but recognizes points of distinction as follows: "A want of limit to the change. An absence of the calcified zone, and clear pencils of tubes around the decay, and an entire absence of the characteristic smell."

Upon the latter point he places much value as a diagnostic sign. In speaking of the clear zone, to be observed between the seat of caries and the pulp, he says: "I quite agree with Magitot that it is a vital process, curative in its tendency, or, at all events, preventive." In addition he says regarding parasites: "There is yet another agency which probably has a large share in the decay of dentine. I allude to the growth of the leptothrix already mentioned. I believe it pervades all carious dentine, pierces it, and perhaps grows at its expense." On the whole this writer is rather non-committal, ascribing decay to a variety of agents in combination, and certainly fails to identify it as due even in a measure to inflammation, since he says: "The term caries is singularly inapplicable, and it has no relation whatever to those diseases of true bone which are so defined." Dr. Magitot, in the translation by Dr. Chandler of 1878, claims that in dentine the action of disintegrating

agents is resisted to a certain extent by the vitality of the tooth, and furthermore recognizes the existence of the clear zone, which is found to circumscribe slow caries, to be an effort on the part of the dentine to arrest the disease, but attributes the loss of enamel solely to the action of chemical solvents.

These are the salient points as eliminated in the dental literature at our disposal, briefly pointed out. It is now my privilege to direct your attention to the most recent observations. At the last meeting of the American Dental Association Dr. Bödecker presented a paper, in which a full account of his investigations was given, which article, together with explanatory cuts, has since been published in the *Dental Cosmos*. In this paper a perfect identification of all the tooth tissues of calcific nature, with the soft tissues, is fully established in every essential particular. In the article referred to he points out that all animal tissues are formed essentially of protoplastic bodies, connected with one another, and are to be regarded as the only parts possessing life. Surrounding these bodies is a lifeless fluid, in which the protoplasma are suspended.

In the soft tissues, the basis substance or matrix is mucoid or glue-giving, and is recognized as a modification of the fluid surrounding the protoplasmic bodies. In the hard tissues the matrix becomes calcified, and is pierced by small canals, through which pass the delicate threads that connect the protoplasmic bodies. The cells of Schnann are now known as the protoplasmic bodies, with their glue-giving investment, which interpretation of the histology of all live tissues, renders obsolete the cell doctrine. With this general explanation of the histology of tissues, we will now direct our attention to the appication of these modified ideas, to the latest developments regarding the microscopical anatomy of the hard tooth tissues. It seems a little strange to us that so absurd an idea should have so long been entertained as to the proper method of preparing dental specimens for the microscope; nevertheless the ridiculous method of deliberately excluding the tissues sought for, and then hunting for them, has been the universal custom. As well might we examine an empty pair of oyster shells, after swallowing the unfortunate occupant, and then wisely conclude that the oyster never existed.

Thanks to the combination of a grain of common sense, with a desire to investigate scientifically, we now know how to prepare the teeth and bones, so as to preserve the organic tissues, and discard the skeleton. This is best accomplished by

resorting to agents having the power of preserving the parts formerly endowed with life, staining them so as to bring them out in bold relief, and at the same time dissolving out the calcareous opaque matter.

Specimens of the various dental tissues thus prepared present the following appearance :

The enamel rods are described as being surrounded by vital bodies of thread-like form, termed by him "enamel fibers," passing parallel with the rods in the spaces between them, which are in relation peripherally with the outer epithelial layer, known as Nasmyth's membrane, and centrally with the processes of the dentinal fibrillæ. These enamel fibers are connected with one another, laterally, by delicate threads, and at intervals give off small conical processes in a vertical direction, which processes are lost to view as they are about to pierce the enamel rods.

Corresponding openings also exist in the substance of the enamel rods, which probably receive the offshoots of the enamel fibers, as he states that, "In thoroughly decalcified specimens of enamel, however, such as were first made by Dr. Frank Abbott, there is no difficulty in seeing, with high power, the reticular structure of protoplasma." At times, the enamel fibers do not pass directly into the dentinal fibers, but are in relation with processes from protoplasmic bodies sometimes found on the boundary line between the enamel and dentine, which bodies receive the off-shoots formed by the bifurcation of the dentinal fibers. Regarding dentine, he declares that the fibrillæ only partially occupy the dentinal tubes, that they give off from their periphery delicate conical processes, similar to those found upon the enamel fibers, which are lost sight of because of their extreme delicacy, just as they reach the walls of the tubuli ; that larger off-shoots traverse the intertubular basis substance, uniting neighboring fibrillæ.

He finds, also, that the tissue between the tubes, instead of being amorphous, as previously taught in all the text books, is pierced by small canals, which are occupied by a decalcified glue-giving substance. Externally, the dentinal fibers are in relation with the enamel fibers, and the processes of protoplasmic bodies, occupying, in some instances, a position on the boundary line between the enamel and dentine. In the fang, they are in relation with the nucleated protoplasmic bodies occupying the lacunæ of the cementum.

According to the same writer, the structure of cementum is almost identical with that of bone. He claims that the stria-

tions are really but the markings of the lamellæ of the Haversian system. The lacunæ are partially occupied by nucleated protoplasmic bodies, which give off processes, the larger of which traverse the canaliculi, and the smaller disappear at the inner boundary of the lacunæ. The basis substance of the cementum is of the same structure as the intertubular tissue of the dentine, being traversed by small canals in the same manner. The larger processes of the protoplasmic contents of the lacunæ inosculate with one another, and also with the attenuated prolongations of the dentinal fibrillæ. At the boundary line between the cementum and pericemental membrane is a zone in which the protoplasmic bodies are more numerous, and connect, by their off-shoots, the protoplasms of the lacunæ with the protoplasms in the striated tissue of the pericementum. At the neck of the tooth the attenuated terminations of the dentinal fibers, as a rule, stop short of the cementum, but in some instances they may be traced into the network of the cementum, which, in this situation, is coarser than the network of the basis substance of the dentine. The cementum at the neck of the tooth is formed of prisms, between which pass beaded fibers, or delicate threads, and from this similarity to the protoplasmic bodies of the pericementum, he considers that the cementum at this point is the result of calcification of the pericemental odontoblasts.

In this situation, it is well known that the lacunæ and lamellæ are wanting. The cementum at this point is covered by an epithelial layer, which folds over to become continuous with the epithelial covering reflected over the gum. In his summing up of results, he very justly claims that, although the living matter cannot be traced through the network of the basis substance of the dentine, cementum and the enamel rods, owing to its extreme fineness, we are justified in assuming that these tissues are pierced by threads of living matter, connecting the protoplasmic bodies of the cementum, enamel, pulp, epithelial layers, pericementum, and the fibrillæ of the dentine, in their various relations with one another.

From these revelations as to the minute dental anatomy, we are enabled to identify the various substances as having as fully an organized structure as that of bone, and through this relationship, we may justly consider their identity with the softer tissue as a fact. Upon this showing, in my opinion, the vitality of the hard dental tissues is fairly established, the fact of the basis substance being more completely calcified than is the corresponding tissue in bone, is a difference only in degree.

Therefore, if the osteal tissues are susceptible of undergoing inflammation, the tooth tissues are equally so. Dr. Frank Abbott, in his article on "Caries of Human Teeth," after a minute description of the microscopical appearance of each of the carious dental structures, gives the result of his investigations as follows: "Caries of a living tooth, therefore, is an inflammatory process, which, beginning as a chemical process, in turn reduces the tissues of a tooth into embryonic or medullary elements, evidently the same as during the development of the tooth have shared in its formation; and its development and intensity are in direct proportion to the amount of living matter which they contain as compared with other tissues."

In addition to the identification of caries of teeth with caries of bones histologically, there are many physical symptoms, well known for a long time, upon which was based the suspicion that dental caries was inflammatory in its nature; but we are now no longer dependent upon hypothesis, or doubtful speculation, but have the truth proven beyond successful contradiction.

In conclusion, it is earnestly recommended that the articles presented by the gentlemen already mentioned be carefully read by all, as they contain a detailed exposition of the points relating to the structure of the dental tissues, and the true pathology of caries, which in this report have necessarily been touched upon in the most superficial manner.

Dr. C. C. Knowles: I will ask if these gentlemen who furnished the paper you refer to, aside from Dr. Abbott, are dentists?

Dr. S. E. Knowles: Yes, sir.

Dr. C. C. Knowles: Then the dental profession has to congratulate itself that the cell theory is no longer a scientific sell. It is an advance, and I am glad that these scientific conclusions that have been relied upon heretofore, and emphasized by the old fogies, are being knocked to pieces, and that the dentists are doing it. That is one of them.

It is remarked there that he fails to discover the carious smell. I have often smelled it. I am satisfied that the positions taken there are in advance of anything that we have had. The article runs through a series of three journals, and it would be well for every dentist to make himself master of these ideas and conclusions, based upon scientific facts and

researches conducted in a scientific manner, and especially the new process of mounting specimens for the microscope.

I have only a reflex interest in this matter. I suppose that many of our cherished views and conclusions, if examined into and minutely studied would be like this cell theory, which has been received for a good many years, and has been bolstered up by the microscope and histological studies in all of the inquiries that have been made up to this period; and now we have a new departure. I think we are getting step by step down nearer to life.

One suggestion quoted by my son struck me as very excellent: "That genius seizes conclusions that plodding minds may wade through long years of experiment without attaining to." I am glad of that. I have not genius, but I have concluded long since that the microscope has not revealed to us the last discovery, and that the principles of life lie deeper down than we have yet reached, and I am glad to see this one step taken in that direction.

I am not satisfied with the explanation of inflammation. It does not convey to my mind anything ultimate or conclusive. If I was young I should take hold and study the question, but I believe I shall not long trouble myself about the matter. I only speak of it to awaken your interest in the matter.

Dr. Robinson: I have long held the idea expressed in the paper just read in regard to vital disintegration. I believe that filling produces an impression upon the tooth substance; that the tooth substance is a vital tissue; and that the impression made by the filling produces a condition in them causing them to take on an action; and that that action was vital, and ended in disintegration or death of the tissue.

Dr. S. E. Knowles: Inflammation is understood to be just the opposite of growth; a retrograde metamorphosis. It is death, in just the reverse manner of growth.

President: This question of the circulation in the enamel of the tooth is supposed, as I understand it, to be between the enamel rods.

Dr. S. E. Knowles: These enamel fibers pass within the enamel rods, and in spaces between the enamel fibers or rods; the little fibers do not occupy completely the spaces between the rods; but they are, so to speak, suspended in the central

part of those little canals; and they are connected with one another by delicate threads. If the fluid in which they rest should be removed, they would be swinging in space, so to speak.

PRESIDENT: I think this paper of Dr. Knowles has a good deal of pathology as well as histology in it, and that it should be discussed from both stand-points.

DR. ROBINSON: At our last session a question was raised whether we could administer a pabulum that would improve the condition of the teeth. I have long believed that food did change, not merely the dentine of the teeth, but the enamel itself. I also believe that certain conditions of health change it. I believe that a woman in pregnancy, that the enamel of her teeth is in a very different condition than at other times. Of course that could not take place without there being a change of vital action. Now, if that is so, cannot we go back a step further and find just that nourishment that persons need, and thus supply the deficiency in the teeth. I think you said you advised your patients to take lime water. Then the question came up whether the animal system appropriates anything from the inorganic world. I believe that it does not, and that we only take from the vegetable world; that the inorganic substance must first be lifted up into a vegetable cell. I find that there is a wide diversity of opinion upon this subject. I believe the mollusk does appropriate from the inorganic world. So it is possible that we may directly appropriate from the inorganic world. At all events we certainly appropriate from all of the organic world, and cannot we find in that condition just exactly the things that we need for teeth in different conditions, to produce just the results we desire. If we believe there is a lack of lime in them, cannot we find some food that nature will take to supply that deficiency. I think a great deal of the inflammation that has been attributed to the lack of inorganic manner in the tooth, has been due to the lack of proper development of the organic substances.

I ask the question, can the animal appropriate from the inorganic world? and if so, in what way, and through what agency?

DR. C. C. KNOWLES: It is not necessary to go back to the inorganic world for lime salts; we find enough in the organic world. The great trouble is to get a menstrum that will allow assimilation. Phosphates come from the organic world, and

are assimilable; and I believe the best forms are the lactates or phosphates.

DR. ROBINSON: Do you mean those taken from the inorganic world?

DR. C. C. KNOWLES: No, sir; the organic world, oyster shells, etc.; they pass through a condition of vitality. It is supposed that an impression is left on the organic world that we cannot detect by chemistry. Professor Mapes takes the position that the lowest form in the vegetable world is the connecting link between the organic and the inorganic; and that our earth plants really do not take from the inorganic world, but from matter that has already passed through the lowest forms of life; and that our system is not capable of assimilating anything that is inorganic.

DR. ROBINSON: The medical world universally gives iron.

DR. C. C. KNOWLES: It is nonsense. I believe it is never assimilated in any form.

DR. ROBINSON: How do you account for the immediate multiplication of red corpuscles in the blood after iron is given.

DR. C. C. KNOWLES: Go back and show me what catalytic effect these elements may have in the chemico vital action. I believe that disease and life has its origin further back than in medicines that are put in the system. It is something we cannot detect by chemistry.

THE PRESIDENT: I think there are two rival chemists in Europe; one of whom believes that there is iron in the blood, and the other believes that there is not.

REPORT OF COMMITTEE

ON

DENTAL THERAPEUTICS.

BY L. L. DUNBAR, D.D.S.

Mr. President and Gentlemen:—Although the majority of dental practitioners would be content to have the boundaries of professional capacity remain as circumscribed as heretofore, and the mass of the medical profession be satisfied with their present meagre knowledge of oral complications, still there are a few yearly increasing in numbers who encourage thorough preparation in both branches for the better understanding of rational therapeutic treatment of oral lesions in addition to the surgical means employed for their relief.

I am not preparing an argument in defense of dentistry as a specialty of medicine, for it needs no such defense; the facts are apparent, and as year succeeds year, in the march of improvement in our specialty, its distinctive place as such, is more surely established, and the sooner it is more generally recognized by the profession, the sooner will our patrons be able to discriminate between the cultured and qualified dentist and the pretender.

Therapeutics is a broad field and very little explored from our point of view; our repertory comprising but a few topical applications, indifferently used, with very little knowledge of their individual properties or effect, other than a vague idea that they have been recommended as effectual in this case or that, a great deal of mischief is often done in their use under such circumstances, and we hail the day when the line can be distinctly drawn (sufficient for public discriminations), between the true dental physician and he who pretends to be such.

Much of this improper use of remedial agents is due to a want of careful perusal of our journals and professional literature, and the disposition to be satisfied with the glory of a brilliant mechanical effort.

I regret very much that I have no extended series of cases to bring to your notice, from the fact that a limited practice gives me more opportunity to theorize, than for any large demonstration of practical results in the line of treatment by medication. I have one or two, however, that may be interesting from the fact that the result of treatment in each was most satisfactory.

Case No. 1.—Mrs. B., age about 30; of very slight frame; exceedingly delicate and nervous; had been married five years, and was undergoing her first period of utero-gestation. Consulted me in June, 1877, her third month of pregnancy. Was much alarmed at an increasing sensitiveness of her teeth; a condition they had been in for many years, in a much less degree, however. I found, upon examination, large cavities on the buccal surface of the lower molars, at the margin of the gums. Nearly all her teeth had been extensively filled in crowns and upon approximating surfaces at different periods in her life, and nearly all were then in very bad shape, fillings leaking and teeth sensitive. The enamel was very friable and weak, and the dentine almost pasty. The saliva gave a strong acid indication to the test with litmus paper. I could only work for her with the greatest care, with intervals of rest. After adjusting the rubber cloth, I wiped out the cavities with full strength officinal carbolic acid, removing the debris and preparing the borders carefully, and without any extensive excavation of decalcified dentine, I simply dressed the cavity with oxide of zinc paste with carbolic acid (a light coating over the most tender spots), pressed dry with spunk and covered entirely with a temporary filling of cement plombe. I then ordered a tooth powder, containing bi-carbonate of soda, to be used three (3) times a day, the last time upon retiring for the night; and gave the syrup of lacto-phosphate of lime, in teaspoonful doses, three (3) times a day, after meals. At the end of one month the sensitiveness had appreciably lessened, and I was pursuaded to try homœopathic "calcaria" (prepared, I believe, from the inner shell of the oyster), and said to assimilate readily where there is a lack of lime salts. With little faith in the properties claimed for it by homœopathic practitioners, I however alternated it with the chemical

food already mentioned and continued up to the end of gestation.

The result upon examination at the eighth month (five (5) months after beginning the treatment), was very marked, indeed, and most satisfactory. The teeth were hard and entirely devoid of their previous sensitive condition, in any test I could make, and the saliva exhibited only a faint acid reaction to the test with litmus; but no more than usually found in the mouths of ordinarily nervous people of weak digestion. The tooth powder was still continued, once a day, during the entire treatment. Parturition was entirely satisfactory, and labor of short duration; the result, a 13-pound girl of splendid proportions, and apparently possessed of a good frame work. The syrup was continued during lactation, and the final operation of permanently filling the teeth concluded some time after. The child, now nearly seventeen months old, has gone through the usually difficult period of teething without the least difficulty, and when the unpromising condition of the mother is taken into consideration, the results are most gratifying.

Case No. 2.—Miss H., age about 8, was placed under my care in May, 1878. Was a pale, delicate child, afflicted with curvature of the spine, and blood very deficient in lime salt. Had been ill all her life, the result of an inherited nervous difficulty. Found her teeth friable and chalky; very sensitive and much decayed; first permanent molars all in position, as were the superior and inferior central and lateral incisors; all seemed deficient in strength, and had a dead lusterless appearance, with cloudy flecs of disintegrating enamel on their faces and at the necks of the centrals; saliva gave a decided acid reaction. Ordered alkaline tooth powder at once, and as the child was taking, in addition to electric treatment for the spinal difficulty, a solution of peroxide of iron, as a tonic, I added the syrup of lactophosphate of lime, with the result, at present time, of a complete loss of sensitiveness in the carious teeth, and an increasing pearly luster of enamel, and entire cessation of the disorganization first noticed. The patient is more tractable under treatment, has a better color, and bids fair, with proper precautions, to have a good healthy set of teeth.

Pyorrha alveolaris, or Riggs' disease, exists in a mild form in about nine out of ten cases we meet in practice, and unless brought in by a violent periosteal inflammation is likely to proceed to gradual shedding of the teeth. Now, what is the

usual mode of treatment in such cases? The patient cannot understand why he should have violent pain in a tooth that has no visible cavity, and the dentist seeing a swelling of some size, concludes at once that it is a case of alveolar abscess, or being in doubt as to what it is, out comes the tooth. The patient is relieved of pain, the dentist rid of a bad case, and everybody happy. Until frequent visits of the same nature, by the same patient (for the disease is insidious and will make a clean sweep if let alone), he finds that it will require mechanical aid to properly prepare his food for digestion; then comes the inevitable plate. All this could have been avoided by proper treatment at the outset. Where periosteal inflammation is violent, I find the homœopathic merc. vivis 3d, in 3-grain doses, every three hours a specific, and have never had a case I could not entirely relieve in twelve to sixteen hours by its use. Then follow with scalers, carefully removing all irritating deposits of tartar, and remove the sequestrum of necrosed alveolar process by repeated applications of elixir vitriol carefully used, and you will be gratified with a permanent cure.

Dr. Dunbar: Upon that subject I would now like to mention a case that Dr. Sichel has. Dr. Sichel came to me about six weeks ago with a patient who had been taking, under his direction, a mouth-wash of tar-water, and the results of that case seem to be very gratifying, indeed. I believe Dr. Dennis, and some others, have seen the patient, and know very nearly all that has been done in the case. I have tried it, but not with the same success. In this case — No. 2 — I have been using it; but, as yet, can't say anything about it.

Dr. Dutch: I would like to ask the gentleman what he is using the tar-water for?

Dr. Dunrar: For the sensitive condition of the teeth. A month ago I began its use; the teeth were a little sensitive; whether the tar-water has produced the effect or not, I know they are not so sensitive now. Whether the tar-water has produced that effect, or whether the treatment has done so, I cannot say.

Dr. Robinson: I believe the royal road to making dentistry a success, is just in the channel that that points out. The only objection is, if thirteen-pound babies are always going to follow, I don't want any around my house just now; but apart from that, I believe it does show the right channel. I believe

that the systematic changes in the teeth are very rapid. I think, sometimes, a few months changes them. Now, if the gentlemen tells us that he succeeds with some homœopathic preparation, that a great many of us, who have been trained in the very strong dose school, think is extremely weak, why, that has nothing to do with it at all. The question is, did it do it. If a man tells me a certain something does something, it may look ever so ridiculous; and yet perhaps I show my wisdom in trying that. Consequently, where somebody has tried those things, and observed them closely, and tells if it is so, why I regard it as something that gives me evidence sufficient to call my attention in that direction, and justify me in experimenting. I believe there is a tendency somewhere in the world, that where some men say something, we bow down to it, and believe it. I think that is true with myself, and true with all of us. And sometimes, when somebody near us tells us anything, we are very apt to doubt those things, until by-and-by we come round to them, and believe them. There is a certain class of teeth that the finest practitioner and finest work cannot save without constitutional treatment, without those teeth being put in a condition that can only be done by constitutional means. I think I might give my testimony in regard to the use of lacto-phosphate of lime during pregnancy. Years ago, I had occasion to try the experiment. I had one family, particularly, who labored under the trouble of having very disorganized teeth; the teeth were soft and pliable: but this species of erosion became better by this treatment. I suggested the use of hypo-lacto phosphate of lime to begin with, where teeth were of that character; and I am happy to say that the cure was so extraordinary, that the father ceased giving the lacto-phosphate of lime after the child had become six or seven years of age, and stated that the frame was so perfectly enormous, whereas, all the other children had poor teeth, very small, weakly frames, and it certainly did impart a strong structure to the bony system in that case, as whereas the sensitiveness in dentine, I have found very good results follow the use of lime and water, used two or three times a day. I am trying the experiment with oil of Eucalyptus; but I have not been using it long enough to determine whether it will have good results.

Dr. Dutch: Mr. President — There are some things about that paper, that I think the most of us who have looked into the matter and studied it over, will find very good, and right to the point. We all know that when we meet our female

patients in that peculiar condition, there seems to be an exalted sensitiveness, and a breaking down of the bony structure of the teeth. I can recollect reading some years ago of this application; and while I have been adopting that method generally, I used antacid at any time when I found teeth decaying about the gums. I recommend that on general principles, because I look upon it whenever I find the teeth decaying about the margin of the gums, that there is an acid secretion exuding from the gum that decays them. And an antacid will correct; but, as a result of this whole thing, if the gentleman promises a thirteen-pound baby, that is a little too healthy for me. I can't take that in, as a result of the treatment.

Dr. Dunbar: I will say, for the information of the gentleman, that this was a case of *prima para.* It was the first child; and we have nothing to draw any conclusion from. They may all be like that.

Dr. Robinson: I would like to look into this *mercurius vivus;* I would like to know what *mercurius vivus* is. We say, we are using these things, and applying them; but what is it? We want to know what we are giving. We give a thing, and don't know what we are giving; we are going back to quackery; we simply give it, and see it produces a certain result; but we don't know how. We have to get that thing; and I have not been able to find out what it is. They simply say it is the *triturate of mercury.* How it is prepared, or what it is, I have not been able to get anybody to inform me; and I would like some gentlemen to inform me what preparation of mercury it is, and how they go about to get it.

Dr. C. C. Knowles: I think Dr. Robinson has made an inquiry here which very few men will be able to answer. He is troubled with *mercurius vivus,* and is troubled with it, well applied, I suppose, to the whole breadth and length of *materia medica.* I don't know why it is that a dose of aloes, scammony, and gamboge, will physic me; but it does it. I don't know why a dose of jalap will vomit me; but it does it; that is, it vomits others. I know that preparation of mercury, especially for troubles of the teeth at night time, produces a marked effect. I have tried it; and, while I don't care to go into any defense of the law of *similiar similibus curantur,* which our homœopathic friends claim it to be based upon, I will say, that *mercurius vivus* is a production of living mercury by trituration, which is, as it name implies — a hundred

grains of sugar of milk, is triturated with a single grain of living mercury—vivid mercury; then that is the first trituration; and a grain of that is again mixed with a hundred grains of the inert substance, sugar of milk; and it is again triturated from two to six hours. It is nothing but finely divided mercury; and why it should, in that attenuated state, produce an effect, which the thorough trituration seems to effect, I can not answer; and I suppose it is not answerable when you get into the rationale of the thing and try to answer it down to the bottom. First, begin and place the irregularity of appetite, or as one extreme materialist thinks, thought itself. It is a question beyond me.

Dr. Dunbar: Don't they always triturate by decimal, instead of hundreds?

Dr. Knowles: I don't know what they do now, but I have made a great deal of it in my lifetime, and that is the old way, thirty-five years ago; because I was then with a homœopathist who has since made some stir in the world, Dr. J. S. Douglas. He and I had an office in the same building in western New York. He is at the head of the homœopathic institution in Michigan, and I learned something of homœopathy at the time, and, in fact, I have that practice in my family; and I believe it to be, when properly understood, the proper system of medicine.

Dr. Robinson: I was the first who used aconite for toothache. Soaking a block of cotton and putting it in the mouth always stops toothache. Last year we discussed whether it did so by its local effect or through the system. The medicine spoken of I would regard as a very important thing for us to experiment on. There is hardly anything easier to give, and in a pleasanter shape. If they act, they are just what we want, and if they are not, we will want to try it, and next year we can tell something about it.

Dr. C. C. Knowles: I suppose it is understood that the grand quarrel between the allopathists and the homœopathists, is what is known in the profession and to the world, as the homœopathic and pathogenic form of medicine. The homœopaths, as I understand them, wish to produce pathogenic effects of medicines, and the allopaths may carry the effect of medicine to an extreme, but the homœopaths never can produce that effect.

Dr. S. E. Knowles: Mr. President, I think it is in very bad taste to drag in the old school fight. It is none of our business. We are not interested one way or the other. We have no particular sect to support, and I am personally displeased to have any sect attacked, or any sect supported. I think most of us practice, in connection with dentistry, the medicine of the old school, and, personally, I am given to practice in that direction.

In regard to the treatment of sensitive dentine, inasmuch as it may be due either to a constitutional or a local cause, it certainly is the intelligent way to endeavor to find out first to what the sensitiveness is due. Now, I have at present a patient under treatment for general hyperesthesia. There seems to be supersensitiveness of the dentine. I have a patient upon the bromide, and I think I am making an impression. The patient not only suffers from sensitiveness of the dentine, but a nervous fear of tooth operations. The sensitive dentine, I think, is due almost always to an exalted acid condition of the fluids and the semi-solids in the cavity itself; and any of the alkalies, either the lime water, the direct application of chalk, bicarbonate of soda, or any of that class of remedies, in my hands, seems to be sufficient to control the exalted sensitiveness so that it can be borne, at any rate with a reasonable degree of fortitude.

Dr. Dunbar: I would like to ask Dr. Knowles how long he has had this patient on the bromide?

Dr. Knowles: A very short time; but three or four days.

The President: Gentlemen, Dr. Sichel is a member of the Committee on Dental Chemistry; and he has prepared a paper, which, in his opinion, perhaps may come under the head of both dental therapeutics and dental chemistry. They somewhat merge together, and, in my opinion, it is dental therapeutics; but in all effects they are so nearly allied together as to make it somewhat doubtful, and he wants to read his paper and make his remarks under this head.

Dr. Robinson: Before we get through with this topic, I want to ask Dr. Knowles a question in regard to dental hyperesthesia. If the sensitiveness is simply superficial, I can understand it; but if I find a sensitiveness in the deepest part of the dentine, how shall I tell whether it is constitutional or

local? I may see local conditions which would indicate that, but it seems to me that local conditions would not go so deep as constitutional.

Dr. S. E. Knowles: Either the Doctor does not understand me or I him. Suppose a patient simply complains of an exalted sensitiveness here, and nothing else, we conclude that that is local purely. There are a thousand and one indications of a general coudition of hyperesthesia, and I don't see any difficulty in determining.

Dr. Robinson: I am confining it to teeth strictly.

Dr. S. E. Knowles: But you must recollect that a human being is something else than a dental apparatus walking around. We have other organs to consider as well.

TAR WATER (AQUAE PICIS LIQUIDAE).

BY MAX SICHEL.

Believing that every new mode of treatment which has for its object the alleviation of pain to be worthy of attention and study, I will offer, as briefly as possible, a few remarks upon the use of tar water in the treatment of sensitive and carious teeth.

A patient presented himself at my office last February, suffering from severe toothache, and desiring that they be filled. He could not bear to have them touched by an instrument. The pain was so severe that it was impossible at the time to examine them properly. I tried various means, with a view of rendering them less sensitive, creosote, carbolic acid, salicylic acid, and many others, but without avail. I then prescribed tar water, to be used twice a day for two or three weeks.

The result proved that my theory was correct; for after the patient had used the tar water for a short time, the sensitiveness dissappeared to such an extent as to enable me to fill his teeth. Having had such marked success with it, I was naturally led to try it subsequently, and, I am happy to say, with equally satisfactory results.

The following are some of the reasons why I prefer it to the other remedies now in use:

1st. It can be more easily applied, and acts mildly.

2d. The patient can apply it himself.

3d. It is preferred by children, as it is only necessary to rinse the mouth.

Many other reasons might be advanced, but these few will suffice.

A word or two as to the tar water used. It is made by

digesting tar oj with water oji. Tar, as is well known, is the impure turpentine obtained by burning the wood of Pinus Palustris, and other species of pines.—*U. S. Dispensary.*

The only inconvenience which exists from the use of tar water is that the tar is deposited on the teeth. But it may be readly removed with a brush and precipitated chalk. Why the tar water acts so favorably in these cases, I am unprepared to say at present. Perhaps it acts as a parasiticide, perhaps as a disinfectant, or as an alterative upon the gums, as it does upon other parts of the system.

Be that as it may, the fact remains, that it is a therapeutic agent of no mean value, and one which it is to hoped will, now that its adaptability in the treatment of cases of the kind above described is known, be as often employed as its merits seem to indicate.

DR. SICHEL: The treatment is very simple and you can use it for two or three weeks with some success. It is easy to apply it to children and the patient has not to come every day.

DR. LANE: Do you simply use it as a mouth wash.

DR. SICHEL: Yes, as a mouth wash; have it in the mouth for a minute or two. Dr. Knox, Dr. Dennis, and Dr. Dunbar, and some other gentlemen saw the case. I don't know whether Dr. Knowles saw it or not.

DR. HOLMES: Mr. President, for some ten years I had associated with a homœopathic physician. We had our office together. We had a series of experiments on his remedies. I had some very obstinate cases of sensitive dentine which I turned over to him and during those two years he tried it on a great many, and I never saw any effect that he produced on any of them. I know some of those cases that he gave up I cured entirely by just lime water and precipitate of chalk, using it as a dentifrice, rubbing it on. I have tried those three remedies and I have never accomplished anything with them. My wife has trouble with sensitive teeth and some two years ago she commenced using just nothing but chalk as a dentifrice, and she used it several weeks till it entirely disappeared, and then ceased using it for awhile, for several months, till the sensitiveness came on again. It is a remedy that always will accomplish what you wish it to do. I don't know but others may succeed with homœophathic remedies. I would say that

we are in favor of that practice in our family. We use it entirely. But so far as regarding teeth was concerned I never could accomplish anything, nor this Doctor Austin; I have just thought of his name. He is now dead. He gave it up entirely.

THE PRESIDENT: I wish to say in connection with Dr. Sichel's remarks that I saw the case he spoke of, and the result seemed very satisfactory. I caught at the idea on general principles. I thought that it was a very happy one, and I could not see why it should not be very beneficial, and after having seen the case and having a great deal of confidence in his statements, and believing him to be energetic and sincere, I naturally came to the conclusion it was something perhaps new and highly beneficial and have been recommending it, but I really cannot say with what result, but I presume in another year we will be able to get more definite information in that particular.

DR. HOLMES: What is that you have recommended?

THE PRESIDENT: Tar water.

DR. LANE: I think that that paper that we have had from Dr. Dunbar, and also the one from Dr. Sichel is feeling in the right direction certainly, and it is a subject very near our hearts. In my practice something that we have to contend with to a very great extent, and if we can find any way of reaching those cases either by local or systematic treatment that will obviate the difficulty of supersensitiveness of the teeth, overcome that acid condition and that sensitiveness which follows, it certainly is a very important step gained in our line of practice. I have had some little experience in using these alkaline preparations for some years, yet I cannot state anything very sweeping or very positive as to their effect. I frequently prescribe the precipitate of chalk, at night on going to bed, to be rubbed in around the teeth and allow as much as will to remain there during the night to counteract the acid. In some cases there seems to have been direct benefit from it, and in other cases it seems to have directly failed in accomplishing the end, and in connection with that I have generally prescribed lime water internally three times a day. My reason tells me that that is about the right kind of treatment, and yet I have not had the satisfactory results from it that I would like to have had as a general thing, though in

some cases I am quite satisfied it has had a decidedly beneficial effect acted through the system, I believe, and there has been local effect from the chalk and perhaps from the lime too. Tar water is a new thing to me, a new idea. I propose to try it sometime. I think it is an idea that is worth trying.

DR. SICHEL: To prepare tar water, you must put water on the tar and let it saturate for a few days or a week. You can let it stand also, and when you want to use it filter it through the funnel.

DR. HOLMES: I would state that I have a young girl about fifteen years old. She is a perfect picture of health; she will probably weigh one hundred and thirty-five pounds; she has good teeth. I don't see any acid secretions in her mouth more than there should be; but the superior right molar, the surface has for the last year been very sensitive; in brushing her teeth it hurts her badly, and I have used every remedy that I can think of in the world, even to at last I took and ground the surface and polished it down and burnished it over and that seemed to give it more relief than anything else, but I have used every medicament that I could think of without any effect. I would like to hear from some one as to what they would do in a case of that kind.

DR. DUNBAR: I would say that this tar water Dr. Sichel speaks of is officinal and can be got at any pharmacy at an expense of not to exceed two bits a gallon; it is too cheap to make. In regard to the case that he speaks of, the boy it seems had very week teeth and the decay was of this particularly soft nature and the teeth were exceedingly sensitive, so much so that he could not use an excavator in the cavity at all, and believing that such is the case, the results as exhibited to us were certainly remarkable. The decay when I saw it had the appearance of this leathery decay; the appearance of decalcified dentine where the disorganization had ceased and left the leathery substance in there. You could cut in there very well with the sharp excavator and the boy would evince no feeling whatever about it, and when asked whether it gave him any pain, he said: "No, not at all."

DR. LANE: It is just a question then whether the tar water treatment would have any permanent effect if it acted locally upon the sensitive dentine where decay or inflammation was present; whether it would have any effect after the teeth

were excavated and filled, to harden the teeth or render them less susceptible to acid action again. The question is, whether along with that we would not want something constitutional to prevent a recurrence of the trouble which the tar water remedies overcomes locally for the time being. Some gentlemen spoke a few moments ago about burnishing. Dr. Holmes spoke about cutting away the surface decay where the acids had acted upon the dentine principally at the line of union, I presume, between the cementum and the dentine. I have found that to be beneficial where other things failed. To cut away the surface decay and polish thoroughly it seems to remove the local decay, if you may say, or the roughness which forms a receptacle for the acid. It does not seem to lodge there, if you leave a smooth burnishing surface the action of the acid does not seem so active and it seems to be overcome in that way when other things fail.

Dr. Sichel: I remember there was such a practice when I was home in the old country of Sweden, and Dr. Lundborg, in conversation about the tar-water, said when people from a certain province came into his office he noticed that they had very nice teeth.

Dr. Dunbar: Dr. Sichel was not practicing at the time. He only remembers it as a boy. He was saying that this Swedish tar was put into a vessel and the water allowed to digest it until it took up sufficient, and the children, peasants and everybody used it, and that they were remarkable for handsome teeth; no sensitiveness whatever and in fact very little decay. They were remarkable for strong, healthy teeth. So that in regard to the newness of this method, that would seem to quash that entirely, for it seems to be an old remedy, very little known here as a general thing, but very much used in a certain corner of the world.

Dr. Robinson: When I was a boy I remember coming into possession of an almanac that was published in Ireland, and it was quite a curiosity to me; and it gave tar-water there as the universal antidote for every ill that afflicted humanity. It cured everything—the whole range of ills. The thought occurred to me, whether if we take and make a weak solution of creosote or carbolic acid, and the compounds are very closely allied, would it not have the same effect. Now, what does water dissolve from the tar? There are certain soluble elements that the water dissolves, the great mass it does not.

I think the active principle in tar-water carbolic acid or salicilic acid are very near alike, and I have been using a very weak solution of carbolic acid. Sometimes I have tried salicylic acid and sometimes, like all the rest, I have thought that they were splendid, and at other times it did not do any good.

DR. SICHEL: There are material substances in tar, which are extracted by the tar-water, which may have a better effect, and it can be easier applied, and the patient can wash his mouth out with it.

DR. ROBINSON: Are not the soluble parts of the tar that go into the water just exactly what we get in creosote?

DR. BREWER: In speaking of the chemical character of tar, the happiest effects of tar is noticed upon the necrosed and ulcerated surfaces, and I don't see why it should not be used for the treatment of abscesses, etc. Now, I have seen the happiest effects in its use with consumptives. It has been stated that fungus forms upon the throat and upon the roof of the mouth, and settles upon the teeth and decays them. If it is due to a fungoid growth, then tar-water is a pretty good thing, even if it is recommended as a remedy for everything.

PRESIDENT: In reply to Dr. Knowles' remarks and Dr. Robinson's, I will say I think we can see very distinctly that the profession is marching onward, and we are coming, at least, to the conclusion that a tooth is a part of the human body, and it is in a very great measure dependent upon the nerve center. I think almost any one, who is a close observer, will notice, after great mental strain, that the teeth are affected; or, after the use of certain foods, that the teeth are sensitive; or, after the influences of great changes of weather, the teeth manifest a change, and it seems to me it is well for us to consider this point, and, as Dr. Knowles says, treat it from the constitutional standpoint. The use of the bromides, for instance, is supposed to have a specific action upon the nerve center and the general constitution, and whatever has a tendency to pacify the general nervous system, must, of necessity, have the same influence on the periphery. And while I only wish to just say a few words, I will say them for the purpose of directing the attention of members of the profession to the constitutional bearing of our specialty. The trouble is, the profession, in a great measure,

and the community generally, suppose that we are dealing with teeth as an independent part of the main organization, and our sphere is just simply to recognize that there is a hole in the tooth and all we have to do is simply to "plug up" that hole. But we are growing gradually, gradually on, to treat this thing as something more than a local matter.

CANCROID STOMATITIS.

BY A. F. M'LAIN, M.D. D.D.S.

MR. PRESIDENT AND GENTLEMEN:—I desire to call your attention on this occasion to a form of sore mouth which is so common as scarcely ever to elicit any notice from the profession, but which at times causes considerable pain and distress. I refer to what is usually known as "Aphthæ," to which, however, the generic term of "*Cancroid Stomatitis*" is more applicable, as it avoids the confusion of ideas which so frequently occurs when the word aphthæ is used. Being derived from two Greek verbs—both having the same orthography, (apto)—one meaning "*to set on fire*," the other to "*bind to*" or "*fasten upon*," has given rise among authors to many contradictory descriptions under a common name, as one or another species of this class of disease is treated.

Now, all of these several species of aphthæ, commonly known as *thrush* or *mugnet*, *tallicular inflammation*, *cancrum oris* and *gangrena oris*, although they may individually present some slight diversity in general features, yet they all bear a family type, and are essentially of a cancroid nature. The difference, which exists between them, consists more, however, in their extent, degree or locality, and in the circumstances with which they are attended.

Viewed as a type, the various species of aphthæ present a characteristic, cancrous, degenerate sore or ulcer, varying from the smallest point to a confluent mass, covering a large extent of surface, which surface has a pasty or exudative appearance. The color varies in the different kinds of aphthæ from a misty, velvety white of hoar frost, to the dirty yellow of scrofulous pus. Their habitat, according to circumstances, is to be found upon the mucous membrane of the mouth, lips, cheeks, fances and æsophagus; and sometimes, particularly in the case of

thrush, it may invade various portions of the alimentary or respiratory tract.

Thrush, as you well know, is a disease more peculiar to the time of lactation in infancy, while the other forms belong more especially to the dentitional period. This disease begins with an errythematic inflammation, on which, however, soon appear white spots which, if not arrested, spread, assuming those curdy, velvety white patches already mentioned.

Follicular inflammation has its origin, as its name indicates, in an inflammation of the crypts and follicles of the mucous membrane of the mouth and tongue, which may terminate by resolution, but which, more frequently, under favorable conditions, degenerates into ulcerated points, which in a short time coalesce and form, according to the severity of the case, surfaces from a curdy white to a dirty brown color.

Cancrum oris and *gangrena oris* present nearly the same features, excepting that the former is a phagedenic or spreading ulcer, the latter a sloughing one; both being more localized in their inception than the others.

These several varieties of canker, for it must be apparent that aphthæ is nothing more nor less than a canker, having their causes from bad or insufficient nourishment, impure air, and uncleanliness, or all combined, by which means, perhaps, a more marked expression is given to the severer forms. It is therefore evident that aphthæ, in all its varieties, is due to a depraved condition of the system.

The kind of stomatitis to which your attention is now especially directed, is likewise a canker, but is a disease more peculiar to adults, and bears a close analogy to those which appear in younger subjects. Like them, it may occur on the gums, tongue, and internal parts of the lips or cheeks. Like thrush, it may begin with small, white points, which in time coalesce. Or as follicular inflammation commences in the crypts and follicles of the tongue or other portions of the mucous membrane of the mouth, and gradually form exudate patches; or, in the manner of cancrum oris, become, from a single point, a spreading or phagedenic ulcer, with red inverted edges and a characteristic elevated or depressed white center. As a general rule the disease we refer to involves no serious consequences, yielding readily to the appropriate remedies, but occasionally it is very persistent, and is thus capable of proving a great source of annoyance, both to patient and the adviser.

I look upon the disease as being the same, and arising from

the same causes, as those belonging to infancy; but as it occurs in subjects of stonger physical powers and dependent upon less cachexia, it loses its force, and does not produce similar constitutional phenomena, or assume forms as aggravated as those of early life. But there is no doubt that the disease results from an ill condition of the *primæ-riæ* or from a cachectic disposition of the system.

These little canker sores will very frequently develop themselves suddenly and in a few days gradually subside of themselves without the intervention of remedial measures. But sometimes they evince not only a considerable degree of tenacity, but they exhibit a great phagedenic tendency. Generally, in these cases, one or two applications of diluted aromatic sulphuric acid or simply diluted sulphuric or nitric acid will suffice to eradicate those aphthous sores thoroughly. At other times, however, both local and general treatment will be required.

A case in point will serve to illustrate the persistency which the disease sometimes acquires, also how its attending symptoms vary or otherwise take on complicated forms.

Some years ago, a gentleman aged about twenty-eight years, of a sanguino-billious temperament, consulted me for an aphthous ulceration in the vicinity of an inferior wisdom tooth, which was short and partially covered by the gum. Cauterization and other remedial means having failed to procure relief, and the parts immediately connected with the tooth becoming implicated, extraction of the organ was resorted to with a decided amelioration in the symptoms, but this was soon followed by the development of aphthous spots on remote and previously healthy tissues, both anteriorily and posteriorily. Under the use of sulphuric acid applications once a day, and a wash, the base of which was a tannic acid, three or four times daily, the sores had almost if not quite cicatrized, and the parts assumed a healthy aspect. Just about this time business called the gentleman to the country, and after three or four weeks absence he returned, complaining greatly. An examination disclosed a large ulceration behind the superior wisdom tooth of the same side, several aphthous patches on the velum and posterior pillars, and also on the buccal surface of the cheek, opposite the first molar tooth. Immediate resort was had to the acid applications, every morning, followed by anointing the parts with a weak preparation of Lugal's solution of iodine, combined with tannic acid and glycerine, he, in

the meantime, using through the day a wash containing permanganate of potash and chlorinated soda, with a few drops of creosote. This treatment would so far control the disease that, at his afternoon visit, a marked improvement would be manifest, but the next morning it would be found that a relapse to the former condition had taken place. Thus, for a number of days, we had constantly intermitting relapses and partial recoveries. When, supposing that a syphilitic taint might have something to do with the case, he was put upon a course of iodine potassium, in addition to the local treatment, which resulted in a short time in a perfect cure.

At about the same time, the following year, this gentleman came to me with two cancroid sores, one over the left superior central and the other a little behind the latteral incisor teeth. Recourse was again had to the same treatment which had proven so successful before, but without the least benefit. On the contrary, the cancroid patches had coalesced and assumed a phagedenic form, extending in every direction. Various combinations of washes were tried without effect. Emolient drinks and mild salines did some good, but all caustics actually aggravated the disease—nitrate of silver more so than the sulphate of copper. After exhausting the pharmacopœia almost for remedies with little effect, and seeing the patient was getting apprehensive and nervous, he was put upon the use of quinine and iron, and the sores dressed twice a day with simply pulverized dried alum, and, to our surprise and satisfaction, in less than a week the parts were so completely restored to health that on the closest inspection not the slightest trace of disease could be detected.

Dr. Dunbar: I have had a good many cases lately of those papillary eruptions, ordinarily called aphthæ, and have found that the use of the elixir of vitriol seemed to have a very happy effect. I was very much pleased to find that I was corroborated in that by Dr. McLain's essay. I have used it frequently, and in conversation upon the subject the other evening with Dr. Knowles he laid great stress upon the use of deliquesced chloride of zinc. I have used it a good deal, and have had the elixir of vitriol called to my notice and have used it in a great many cases, and I think with a great deal better result, and I would like to hear from some other members as to their experience. I was glad to see the matter embodied in the paper.

Dr. McLain: Probably it would be well, Mr. President, for

me to explain my method of using this preparation of this acid. I generally make a little swab of some kind of cotton, and saturate it with diluted sulphuric acid, or the aromatic or elixir of vitriol, it is all the same thing, and I touch the part that is affected, and I immediately have a pinch of bicarbonate of soda and just place it right on, so that in case the acid should come in connection with the teeth it would stop the action on the teeth and at the same time it effervesces and the whole thing neutralizes the free acid. I tried the practice to place the soda in such a way that the fluids of the mouth did not come in contact with it, and touch it instantly with this little swab, sometimes only one application, but if the erosion is of considerable depth, and I find there is an excavation there I apply it until that white deposit is removed and it leaves a little kind of a red surface, and then the application of soda removes any burning sensation.

REPORT OF COMMITTEE

ON

DENTAL CHEMISTRY.

BY J. L. ASAY, M. D.

Chemistry, in its entirety, is a science, in which no deviation from principles is possible; the laws which govern it are positive. We may divide it into medical, dental or any other branch as we choose, but no line of demarcation exists to distinguish one from the other, since its laws are universal and fixed.

It is therefore assumed that dental chemistry, so far as its name implies, is merely an imaginary division for special study, and relates to chemical changes occurring in oral cavity, and the effect of inorganic substances when brought into contact with organic substances, together with the chemical nature of materials employed in dental science.

As a dissertation upon the whole branch of dental chemistry would consume much time, would be equally laborious, and lead us through interminable labyrinths, we are obliged to content ourselves, on this occasion, with certain subjects, as a precursor to its more intimate relations which may from time to time appear, ever trusting that as the discoveries of to-day are but the finger-posts that point to the triumph of the morrow, so may we be induced to patiently study the complex and varied changes occurring in the mouth that we may practice our profession intelligently and successfully.

The first of these subjects, therefore, which attracts our attention is the

REACTION OF ORAL FLUIDS.

It will be remembered that three distinct pairs of glands empty their secretions into the mouth, besides numerous follicular glands lodged in and beneath the buccal mucus membrane.

From experiments of Magendie, Bernard and others, it is demonstrated that the fluids of the parotid and sublingual glands are clear and watery, and contain but a small proportion of solid matter, whilst that of the submaxillary is thick and visced, and contains a larger proportion of solid matter.

With the influence of the respective salivary glands on digestion, and the important part they play upon food when taken into the mouth, to be afterward submitted to the functions of the stomach, we have no present interest, but certain it is that they act in different degrees of efficacy for that purpose.

The secretions from these sources are often varied in quantity, under certain influences, being augmented by the action of the masticatory muscles, the odor of savory food after a long fast, and other exciting causes; diminished by fear and exalted temperature of the body.

What is considered the normal characteristics of saliva, is a question, to many minds, of perplexity, yet it has, in a measure, been conceded to depend upon the nationality, habits and pursuits of the individual, and that saliva is normal, in which acidity and alkalinity in the mouth are so neutralized by contact with each other in such proportions as to leave alkalinity in excess.

A sweeping assertion has been made, and often reiterated, that the characteristic reaction of saliva is alkaline, to this we agree so far as an admixture of the fluids is concerned, yet is far from truth as regards the identity of each distinct secretion, besides many modifications may and frequently do occur, for instance, saliva changes its chemical proportions after a full meal when it is alkaline, to the end of a long fast when having passed from the alkaline condition to neutrality, becomes decidedly acid in its reaction, and how shall we determine that the one condition for the time-being is not equally as normal as the other.

Again, we find from observation that in subjects of robust health and hearty eaters of wholesome food the mixed fluids

of the mouth are always alkaline, but in those of effeminate stature, with nervous temperaments and sedentary habits, they are either neutral or acid.

We therefore assume that an alkaline reaction is not universal in health, even when the litmus is placed directly under the tongue, which is the most favorable position for the test. But may not the secretions be acid in one part of the mouth and alkaline in the other? Experiments have shown that where the test has been applied under the tongue in an admixture of saliva, showing an alkaline result, yet by applying the litmus to the free margin of the gums, or in a deep sulcus of the mouth, previously rendered perfectly devoid of food or other extraneous matter, we secure a decided acid reaction.

So far as our observations have been made, we are led to believe that this acid condition is produced by the agency of the buccal mucus containing a peculiar principle called ptyatin, albuminous in character, and in such condition as to be capable of producing fermentation. Neither pair of salivary glands, according to the researches of Cl. Bernard, can by themselves effect the change, "but an admixture is necessary for the generation of this peculiar ferment."

Saliva is liable to a departure from its normal standard through such a cause, as in fever, or other accute affections of the system where the degree of temperature of all the organs is raised, thus affording increased facilities by the influence of heat and moisture for the process of fermentation, and it is in such cases that an alkaline wash for the mouth is particularly grateful to the patient and serves as a preventive to those morbic changes which attack the teeth and appendages during such a condition of exaltation.

Acids are generated in the oral cavity from food and condiments taken into it. More especially is this the case in uncleanly mouths. In such instances as where portions of the food are allowed to be retained about the teeth and in their interstices, we have by the simple process of fermentation the generation of acetic acid, and as decomposition advances it will frequently be observed that upon removing extraneous matter from beneath the teeth or other receptacle the familiar odor of sulphuretted hydrogen is present, and such conditions will remain so long as the exciting cause is permitted to exist.

Other acids found in the mouth are lactic, citric malic, and frequently the mineral acids. The presence of these vegetable acids is attributed to their being set free during the mastica-

tion of the fruits containing them. Lactic acid exists in the mouths of those afflicted with gout, rheumatism, malarial affections and gastric complications. Mineral acids, though no doubt frequently generated in the mouth, yet chiefly owe their presence to their administration as medicines, and when we remember that the nitro-muriatic is a tonic of par excellence in many cases, and is habitually used as such, and that hydrochloric, in the form of tinct. chloride of iron, is the sheet anchor in diptheritic affections, we need not be surprised at the ravages of tooth structure as the result of these acids.

But as I have before stated, they may be generated in the mouth. For instance, nitric acid may be formed from the nitrogenous food remaining in the mouth and concealed in recesses, the food giving up its nitrogen which, uniting with hydrogen in the necessary equivalents to form ammonia, which in its turn, becoming decomposed, and an oxide of nitrogen formed of course nitric acid will be the result.

In organic structures, sulphur is always united with albumen, and the same causes that produce sulphuretted hydrogen in the mouth will assist in forming sulphuric acid.

Hydrochloric acid is contained in the gastric fluids, but the quantity that would be found in the mouth from this source as by eructation, is so trifling that its consideration will not at present be attempted; besides the salivary glands, either by their secretory or excretory functions frequently furnish it, but its presence is oftener due to the union of hydrogen with chlorine, the latter being liberated from the chlorides dissolved in the mouth or from the continued use of saline diet. Again, its presence may be due in consequence of galvanic action caused by the insertion of different metals in teeth of the same mouth. More particularly should such fillings be of gold and others of amalgam. Mucus and saliva contain the chlorides of sodium and potassium, and these being resolved into their elementary principles by galvanic action thus established, the chlorine unites with the hydrogen, and hydrochloric acid is the consequence.

In regard to formation of acids by fermentation and habits of negligence, the old adage that "cleanliness is next to godliness," is in such cases particularly applicable, and should be deeply impressed upon the minds of those entrusting themselves to our care. The mouth needs washing as much as the face and other parts of the body. Teeth of good structure, if kept clean, seldom have their continuity impaired, otherwise we always have disintegration of tooth structure, the depriva-

tion of its earthy constituents, and eventually of its irreparable loss.

All acids found in the mouth when predominating, although in their weakest condition, will dissolve the lime salts, and this degree of decalcification is in proportion to the density of structure attacked, and is exhibited in the greatest measure where chalkiness of the tooth is in excess from such causes as inheritance or impoverished condition of vital forces.

Acids to disintegrate tooth structure must be constant in their application. When acid first attacks a base, a salt is formed, which is no longer acid nor alkaline, but neutral in its character, and this salt must be removed, as it necessarily is by being taken up and held in solution by the fluids of the mouth, and a new quantity of acid brought into contact with the exposed structure to continue the process of decalcification. In other words, there must be a continuous circulation of fresh acid, otherwise the process of chemical destruction is retarded and at length entirely checked. Therefore, decalcification is in exact ratio to the amount of chemical force applied.

DR. ROBINSON: I have one serious objection to the paper; it is too short at one end.

THE PRESIDENT: This you may say is the only paper we have had under this head since the Association was organized. The question is somewhat new.

DR. ROBINSON: I would like to ask the gentleman a question: What is his theory with regard to the formation of salivary calculæ ?

DR. ASAY: Mr. President, the only theory that I can give is by the taking up of lime salts in the mouth, the earthy salts, and depositing them around the necks of the teeth.

DR. ROBINSON: That is a fact but not a theory.

DR. ASAY: Well, the fact demonstrates the theory, if you mean the mechanical rationale of the operation. I am not sufficiently prepared to explain it at present. I have not looked into it carefully enough to explain the chemical changes that take place.

DR. KNOWLES: I think perhaps I can answer the gentlemen; the calculæ are formed principally of the phosphates of lime, soda and magnesia; principally of lime. The phosphates are

excretory; they are in all fluids, in all the excretions to a certain extent. Quite a large proportion is eliminated through the kidneys of this same material. The reason it is precipitate is this; it is held in solution probably by the carbonic acid gas, or at any rate if not by reason of the acidity of the secretions, whenever it is allowed to stagnate, or is brought in contact with an alkali the precipitation takes place; it is not a simple stagnation that causes it to precipitate, but the organic constituents are undergoing changes which eliminate alkalies, and the precipitation takes place on account of the inability of the fluid to hold them all in solution. This thing can be readily verified by taking urine and boiling or adding an alkali, and the precipitation can readily be seen, which proves it to be nothing but the phosphates and not of an albumenous nature. The reverse test can be applied by acidulating it, and the fluid will readily be cleared up. It is merely a concretion; the tartar, as you all know, will collect about anything in the mouth; it will collect on an artificial plate or any foreign material in the mouth, and it is brought about in a way almost similar to the way in which the precipitate is brought about. When hard water is boiled, in that case the sulphate of lime is held in solution by the infiltration of carbonic acid gas, and the boiling simply drives off the suspending medium, and of course earthy salts no longer being in solution, but taking on their atomic or molecular form are precipitated, and even sometimes going to the extent of adhering to the membrane, not making it necessary for a solid body to be present. I know for certain, that this takes place in the bladder, and we have every reason to believe that, under favorable circumstances, this may take place in the mouth. It is true that the parts are more mobile and easily cleaned, but we certainly sometimes find secretions around the teeth. A favorable illustration of this theory, or at least a portion of it, is in breathing into lime water. It is a restoration of the carbonic acid that comes from the lungs. Anyone can try the experiment very easily by taking lime water and breathing into it, and in a very few minutes there is quite a precipitate formed by the union of the carbonic acid and the lime, that is quite a different reaction; that is where the carbonate of lime is formed. The reaction I was referring to, is where the carbonates are held in solution by a solution of carbonic acid gas in the water. The experiment referred to is a precipitation of the hydrated oxide by its conversion into a carbonate of lime. It is just the reverse; in the one case the driving off of the acid precipita-

tion the sulphates of lime, and in the other carbonic acid gas from the lungs combines with another salt of lime and formed a carbonate, and that is thrown down and formed a precipitate.

I might state in this connection, in the case of ranunclæ, where there is a true stone in any of the salivary glands, or any of the ducts, that the nucleus is invariably found to be foreign, the center about which the concretion takes place. I think that the formation of a stone without the foreign nucleus, is unknown, and it seems to be almost necessary for it to exist. In the mouth, of course, the teeth furnish these nuclæ.

Dr. Lane: I would ask Dr. Knowles to give an explanation of his theory, why the tartar deposit is so profuse in some mouths, while it is not so profuse in others; is it from the fact that there is a superabundance of an alkali in the system, or is it from some other cause? I mean where there is actual care exercised in the cleanliness of the mouth, etc.

Dr. Knowles: Well, I would state that the amount of deposit is usually in inverse proportion; if the mouth is kept clean there are two general kinds of tartar. Where we find these immense masses of white chalky tartar they are usually in connection with a particular form of dyspepsia; all the parts of the body being loaded with phosphate of lime, there seems to be more secreted from the body than usual, but the amount depends somewhat upon the alkalinity of the secretions of the mouth. It is like this, say for instance, that a certain number of grains were secreted in a day; the fluid is immediately passed into the stomach or passed entirely from the body; of course there is no precipitation; the whole thing remains in solution all the time and none will appear at all; then we will have a kind of negative proof that there was none to deposit, but if on the other hand the same amount was in the system, and they should be held in the mouth long enough to have them degenerate or to become alkaline, or if they should be brought in contact with alkaline saliva the whole or a very large portion might be precipitated, and in that case of course we get it.

Dr. Lane: How is it Doctor, we have active decay in the same mouth evidently from the effects of the acids before we have alkalinity.

Dr. Knowles: That is very true; we do have active decay in the same mouth but not in the same place; tartar seems to be a kind of antidote, the parts being cooled with the tartar the decay necessarily ceases.

PROFESSIONAL ETHICS.

BY J. J. BIRGE.

The science of ethics germinated soon after our progenitors, Adam and Eve, partook of the forbidden fruit in the Garden of Eden. The first outcropping of which we at this late date have any knowledge, was in the use of the fig-leaf; for after the eyes of Adam and Eve were opened, they saw that they were in a state of nudity; and after due consultation, their newly acquired perception of true refinement and modesty prompted them to make from the fig-leaf aprons to wear, in order that they might appear in public in more becoming style.

Since that early day there have been many and very great changes in regard to customs, manners, dress, etc., among most of the nations of the earth. But I was a little surprised, recently, on meeting a lately returned traveler from the interior of Japan, to learn that at the fashionable watering places in the heart of that country, during the hours of bathing, they stand just where our progenitors did before they ate of "the tree of knowledge;" for the two sexes, literally in the garb of nature, walk down to and into their bathing tubs, some of which are large enough for eight or ten to bathe in at the same time, others smaller. I am told that after the two sexes have gone through their ablutions together, which consume some time, for they chat and play in the water and splash it over each other as our children would, they leave the baths and walk to the verandas of their houses and there bask in the sun's rays in the most *nonchalant* manner possible, keeping up a cheerful and animated conversation, until the soft balmy air and the sun have nearly vaporized and drank in the pearly drops that were gently trickling down their nude, and in many cases most beautiful forms. They then

dry with towels and dress. I am told that this is all done with the innocence of children, and without the least shadow of thought that there is in it the slightest impropriety. With us, at our watering places, such a custom would mantle many cheeks with a crimson blush.

We find, indeed, even among the most civilized nations, very great diversity as regards the prevailing systems of social ethics, and the resulting rules of etiquette. But, Mr. President, I believe that our Divine Maker has given to every intelligent human being, at least a crude code of ethics. It is innate; and if we could cherish that ethical instinct so implanted within us, and guard sacredly and conscientiously against any violation of it, it would accomplish more good, relieve more suffering, fill more hearts with joy, and do more to elevate the human race in all that is desirable—morally and physically—than all the precepts, laws, or edicts that have gone forth since the dawn of civilization. In fact, we might then look for the long desired millennium. But, unfortunately, this is not the case. We have made, it is true, great advances in civilization. In natural science our progress has been great. We can measure the heavenly bodies which in distance are billions of miles from our earth, and we can almost analyze their composition. By the aid of electricity, San Francisco may to-day exchange greetings with any of the great cities upon our globe; Edison and other scientists are making use of the same subtle force to dispel the darkness of night, and almost give us day instead; and a thousand other recent strides in progress might here be noted, would time permit. Yet, unfortunately, in the science of moral philosophy, or a system of moral principles, truly observed and carried out, we are to-day sadly deficient. The same evil spirit that led to the fall of man still clings to human nature; impairing the force of the better impulses, and checking moral advance. Our progress in this respect is very slow. Indeed, many think we are retrograding; and that the science of dishonest money-making seems to absorb the minds of too many who by education and social standing claim position in respectable society; but who, were they really to answer for their crimes, would occupy a prisoner's cell with fit companions, thereby becoming powerless for further impositions upon the credulous, or for increasing the list of the widows and orphans who mourn the desolation of their homes.

"Professional Ethics:" What does it demand of us—of the dental profession? Paramount to all other things is a careful

and exact fidelity to our patients. We should be prepared to throw upon them all that is known to science in our profession. To do this, we should not only become well informed in anatomy, physiology and therapeutics, but we should keep up with the dental literature of the day; we should analyze and test the gems which are from time to time added to it through the journal and the latest standard works of this country as well as those of Europe. By so doing we obtain the benefit of the careful researches of the greatest minds in our own profession, as well as in that of medicine; information which they have consumed many of their best years in obtaining, and in testing by analysis by the use of the microscope, and by careful watching of therapeutic effects.

We have to combat with the subtle forces that are wasting away the teeth of the young, as well as the various diseases which in so many forms we meet with within the vocal cavity of older persons. Those who submit themselves to our charge have a right to expect careful and scientific treatment in all that we undertake; and if we fail through a lack of earnest effort in that respect, we are guilty of grossly unprofessional conduct, and richly deserve the contempt of both the profession and the public; and sooner or latter it will come.

Our office rooms should be kept scrupulously clean; and particularly our instruments, napkins, and all appliances which may come in contact with the patient; and, if possible, our finger-nails should be kept out of mourning. Even amid the most trying difficulties, the dentist should be kind, gentle, affable and patient. If he should meet with a mishap, as for example, should break a tooth or a forceps, he should not fly into a rage and dash the instrument across the room, endangering the lives of those present, and presenting to them the appearance of one just escaped from the mad-house. I happened, on a certain occasion, years since, to witness an outburst of that kind. If I had not been good at dodging I should most likely not be here to-day to bore you with this paper, for my skull would probably have been a sacrifice, and the flying forceps would no doubt have finished my earthly career.

What is our professional duty toward each other? We may sum it up almost entirely in one word—*integrity*. Let that be our guide and we shall seldom do injustice to any member of our profession. We should be slow to believe unprofessional things of our brother members, which may be told us by new patients; especially of a member in good standing. A certain class of patients, when they come to us, will often reflect in

some way upon their former dentists, thinking that disparaging words spoken of a rival will be pleasing. Another class, more refined, do not intend to do injustice, but they receive wrong impressions—"get things mixed,"—will say that such and such a dentist said so and so, or did thus and so; often things which we know full well it would be impossible for any intelligent dentist to say or do. It may be of bad fillings, or of extracting a wrong tooth, as, for example, a permanent molar, assuring the patients that it was a deciduous one; and the patient is perhaps really mourning over an imaginary injury which is fancied sure to extend through life. Now when a dentist in his greed for money, knowing these impressions to be entirely without foundation, helps to strengthen and confirm them, he is an assassin. He does not, it is true, strike a blow in the dark, destroy life, and stain his hands with human blood; but he stands concealed with an upraised, gleaming blade ready to strike down and destroy both the professional and the moral standing of his fellow dentists. And for what purpose? That he may put a few more paltry dollars in his own pocket!

A man's honor should be more dear to him than his life; and it is somewhere said that he who would undertake to destroy an honorable reputation is more guilty than he who actually takes life. In one case, the guilt has a limit in the death of its victim; in the other, it is almost without limit; for it not only destroys the victim to-day, but its effect passes on through future generations, to blacken and defame his name so long as history and civilization remain. I have always thought that the slanderer and defamer of character should stand thus convicted by all honorable men.

These assassins of character steal upon their victims in various ways. They use a diversity of weapons to accomplish their aim. Sometimes it is by innuendo, sometimes by direct insinuation. Perhaps it is merely a shrug of the shoulders; or, again, they "don't wish to say anything." At other times, deep, and even fiendish, schemes are concocted, and boldly carried out. Probably few of us have escaped entirely uninjured from these poisoned shafts which are hurled, with such deadly aim, by some members of our profession.

What a different being is the truly honorable professional man! He stands out in bold relief from the above class, and in strong contrast with it. He is ever ready to extend the helping hand to the young dentist, or to the weak in the profession, who are earnestly seeking information, knowledge and

advice. His generous impulses, his keen perception of professional honor, will as quickly stir him with indignation, and bring burning words from his very heart to defend an honorable brother from unjust aspersions, as to defend his own honor were it similarly attacked. If in the teeth of a new patient he finds evidence of difficult, skillful and artistic operations previously performed, he is delighted; he examines them with the eye of an artist; and feels that such work is an honor to the profession, as well as to the dentist who so faithfully fulfilled his duty. He will surely make inquiries, and learn the name of the fortunate man who did the work; and he delights to speak in the most eulogistic and complimentary terms of it to his patient. The finest painting by one of "the old masters," can have no greater effect upon the most enthusiastic artist of the present day, than does a masterpiece of art produced by one eminent in *our* profession upon the truly appreciative member of it.

What does professional ethics demand of the young graduates, who have listened to the teachings of the honored professors in our dental colleges, where, before they receive their diplomas, they are admonished to guard the dignity of their profession? to be guilty of no act which can reflect upon themselves as honorable men; to descend to no quackery, or to charlatanism in the way of advertising "cheap work," "new modes of practice," and humbuggery in general; and to which admonitions they tacitly assent, and thereby virtually pledge themselves to strictly carry out.

It demands of them, if they have one spark of honor in their composition, strict compliance with the rules laid down; respect for their preceptors, their professors, their alma mater, and the profession; that they should not perjure themselves as soon as they are fairly beyond the shadow of the college which has honored them with a diploma. But, Mr. President, and gentlemen, it is really most humiliating to honorable men of the profession to see *graduates* drop into the gutters, and become the professional companions of the class of men found there. I sometimes think it is in the blood, inborn; and that, if an attempt be made to lift such persons from the gutter by education, they will, the moment you let go of them, be almost sure to drop back into their native elements, relinquishing all noble aspirations, and content again to mingle with the common herd.

One word in regard to dental associations. We do not claim that all the members of such associations are as worthy as

they should be. But suppose we should divide our profession, here in the United States, into two parts, the first composed of those only who belong to dental societies, and the other of those entirely outside of such societies. Can any one doubt for a moment the vast difference between them as regards intelligence and respectability, or moral and professional standing? I think not.

To the first, we may say, would belong all of the great and leading spirits of our profession; those who, by their teachings, their clinics and their pens, have done so much during the past thirty years to build it up; all the professors of our dental colleges; the men who, by their deep researches, by the use of the microscope, the delicate tests of chemistry, and by patient and unceasing efforts in all the scientific branches of our profession, have given to the American dentists, in all civilized parts of the world, a pre-eminence rarely possessed by those of any other nation.

Now, let us see whom we find outside of our societies who claim to belong to the profession. There are a few for whom we have a great respect; but are there not, even among those few, some who, vulgarly speaking, may be called, "old fogies?" who, years since, so far as progress is concerned, came to a stand-still, and have run along in the same groove in which they were found twenty years ago? They seem to be clad in an impenetrable armor. The bright ray of light thrown out by science, which penetrates the souls of others, and electrifies them to new exertions, has no effect upon this class. Most of them still cling to their antiquated notions, and, of course, with such there can be no progress.

Now, Mr. President, who are the balance of this last party? They are the class who advertise "cheap dentistry;" who advertise to do work for what would be less than one-half the cost of *the material alone* if the work were done as it should be done. This class inflict irreparable injury upon the public; more particularly upon that credulous, unthinking, ignorant portion of it, who are duped by such advertisements. In fact, all the charlatans, the quacks, the humbugs and the cheats, who have crawled from the gutters of society into our profession, are there. No, not all; for two of the most noted of that class, who disgraced our profession, and their holy religion as well, while on this coast, are *not* among them. We learn that one of these two is in the State Prison of Massachusetts, and the other in that of North Carolina.

It is unquestionably derirable that every dentist of respect-

able reputation should connect himself with some dental association. He is, otherwise, in danger of losing that respectable reputation. The fact is that he does not realize this danger. He does not properly consider the position which he occupies, in allowing himself to be classed with those who have not so associated themselves. It is said that "a man is known by the company he keeps." These gentlemen are not sufficiently alive to the character of the "company" with which they are likely to be identified. I have often thought that if there could be a grand review of the profession, divided, as I have above suggested, into two parts, arranged in two lines which we may term respectively "the associates" and "the non-associates," with the entire public as spectators; and the really excellent men of the "non-associates" were to step out of their line, advance a few feet, about face, and take a "square look" at the balance of said line, they would at once awake to "the situation;" would realize the false position which they occupied in permitting themselves to be classed with such a crowd; and, feeling the effect of the public eye, instinctively conscious of the popular verdict then and there silently rendered, would hasten to rectify that false position, and enroll themselves, without delay, in the ranks of the "associates."

In conclusion, Mr. President, I will simply ask this question: Would it not, in this view of the subject, which I think is the correct one, be more *professional* for every practitioner of dentistry to attach himself to some dental society? *He* would certainly be the gainer by so doing; and he could undoubtedly benefit others in return. All respectable dentists are cordially invited to join our societies; and it seems to me that "professional ethics" require an acceptance of the invitation so warmly extended to them.

Dr. Lane: Mr. President—If there is anything that pleases me more than another, it is anything on the subject of professional ethics. I certainly endorse the sentiments read in the paper by Dr. Birge; and it does us good, as individuals and as a body, to look at that phase of the question. If there is anything that is painful and degrading to our humanity as well as to our culture and our professional standing, it is the unprofessional conduct of men that ought to know better, and from whom we ought to expect better. It does seem unfortunate that education fails so frequently to raise men to a higher plane, or to a plane sufficiently high that the very moment you

cease to raise them by drilling and education they fall back to a level into the slum again, and seem to wallow in their native element. If there is anything that we should cherish, it is the reputation of our practitioners and of the profession; and if there is anything that we should labor to sustain, it is our dignity as a profession. Our profession is comparatively young, and does not stand as firmly established as that of medicine.

DR. HOLMES: Patients sometimes come to us from other dentists, and we cannot always tell from the outside appearance of a filling how much work has been done. I did $160 worth of work for a poor boy working in a hotel, and charged him half price, $80 for it. He came to San Francisco, leaving a balance due me of $30; a dentist in San Francisco saw the work, and had the honesty to say that the work was first-class, but that $50 was sufficient charge; so now I am short $30, and his finances are not increased at all.

OUR ETHICAL CODE.

BY W. H. ROBINSON.

We know Dr. Birge will not object to us writing on a topic specially assigned to him. From my recollection of the Doctor's views on this matter, he and I will not be apt to say the same things. We agree in the objects sought, but hold different views as to the best ways to obtain these objects.

We all agree that dentists should be gentlemen — and give the term, gentleman, the old-fashioned meaning — one who is honest, industrious, intelligent, generous, refined, courteous, and *virtuous*. But our code does not have this salutary influence on all who subscribe to it. We believe every man who claims to be a dentist, should have good literary and scientific culture, and that he should thoroughly understand the anatomy, physiology, and more especially the pathology of the oral cavity and its appendages; that he should be able to accurately diagnose all its local pathological lesions, and trace these to their antecedent causes, and be able to so accurately comprehend and analyze them, as to tell whether they are constitutional, local, or hereditary. That he should be able to so accurately diagnose all dental lesions, and tell whether they are chemical or vital, and whether they originate in the organic or inorganic tissue element. But our code does not require or impart this amount of enlightenment.

We also believe he should be able to diagnose and prognose so accurately that he could with very great certainty, predict what teeth can or cannot be permanently saved, and what kind of filling is most compatible with their structure and lesions. But in the impartation of this information our code is defective.

I believe a dentist should be a close student much longer than our code requires; should be more thoroughly instructed and more competent to practice than our code requires; and if

the special essayist on this topic has, or can set the standard higher, in either mental or manual attainments, I will adopt his standard instead of mine.

I also know that in many associations that adopt a similar code of ethics, many bungling quacks and frauds get into these associations; and many of this fry use their connection with the association as a special lever to boost them up a little higher—not in professional attainments, but in popular favor.

Dental Associations should do just what they profess to do. When they say to the public, our members are all men of good moral character and efficient professional attainments, and do not fulfill this pledge, then the Association violates its own code, and becomes a public impostor; and we hold no Association can honestly give and fulfill this pledge. With all the legal forces of the State to back us, we could not fulfill this pledge.

Supposing our Association should say to the public: We do not require or guarantee anything in respect to our members, and we tell this plainly to the public, and open our doors to all in the profession; and all hanging about its ragged edges are invited to come in. Let the public once understand this, and they would not be deceived by us, and choose a dentist whose evidence of competency was membership in the Association, because then they would know being a member of a Dental Association was no evidence of integrity or competency. What say the advocate of our code of ethics, admit every fraud and quack to our associations? Yes, if they sought admittance. Don't dental associations in general, do that now? How many who ask are denied admission?

True, we occasionally expel or reprimand a member, but not because he was dishonest, incompetent, or immoral, but because he advertised unprofessionally: and his conduct I condemn as strongly as any; but it has this merit, it was done openly and above board. Had these members been guilty of the grossest frauds and malpractice on their patrons, it is quite certain the Association would not have censured their conduct.

Our dental and medical colleges are more compact organizations than all associations. They have their members directly under their control for months or years. They all *profess* to require evidence of good moral character on the part of their matriculant; and this, combined with professional scholarship and competent attainments on the part of graduates. But what does it amount to? Do they give only honest men and competent practitioners to the public? We know too well

that some of the vilest frauds that curse the world are vouched for by collegiate diplomæ as men of good moral character and competent professional attainments. How much more honorable it would be for these schools to say to the public: We vouch for no one; judge for yourselves.

When dental associations say we admit to membership only men of competency and integrity, they are adopting a rule no association ever did or could enforce. Consequently, when dental associations say our members are men or good moral character and competent professional attainments, they say what is not true, and deceive the public.

We have no fault to find with the principles of our code of ethics as a rule of professional conduct. Our personal standard should be much higher, and every dentist should be far above the few requirements of our code, and no one has a stronger loathing and disgust for the poltroon who pledges himself to our code and then violates it, than we have.

What we object to is the false position the associations assume with regard to their members. All codes who use the term "*good* moral character," should state what it means. Many persons suppose that when the constitution of a dental association says one invariable qualification of membership is a good, moral character, that such association does exercise some surveillance over the conduct of its members; not only their present but their antecedent conduct. Add to the qualification required by our constitutions the higher one of our ethical code, that the member shall "sustain a *high-toned, moral character*," and then ask what does this all mean? If the conduct of associations in dealing with their members be the proper answer, it means, if a member advertise to charge $10 for a set of teeth, and do this honorably and professionally for some poor person, he is guilty of violating these high requirements. But if that same member, without advertising, had charged that same poor person $50 for a set of teeth that was not worth ten cents, and a libel on the name of dentistry, he would not be guilty of violating this high-toned requirement.

No association can stand guard over the private morals of its members. The only class of offences it can take cognizance of are public ones, that public opinion and the legal code control much better than any association can. I am casting no stigma on the California State Dental Association or any other association. Last year I gave my views of Dentists and Dentistry on this Coast. Now I am referring to our prestigatory code, whose magical wand touches and, lo! we are all

gentlemen of *high-toned,* moral character. Man's morality, like woman's virtue, must be above codes to have any value. Morality or virtue that is measured by codes is apt to have a "fishy" odor. The pure woman, whose virtue is above codes, would hesitate to join a society that asked any questions or gave any vouchers concerning her virtue.

A man may be a gambler, a libertine, a debauchee—without a spark of honor, conscience or integrity—a cunning fraud and a shrewd scoundrel, and yet be a member of any State Dental Association on the continent. Of course he would do as his kind always do, conceal his vileness and prove his high-toned morality from the code. No one holds a higher opinion of the sterling integrity and morality of the members of the dental profession than I do. Our codes deserve no credit for this. After all, our codes are rather nice affairs to read. Their few simple requirements are easily complied with; so easy that many dentists, outside of the association, rigidly comply with them, and certainly no one, worthy of the name of gentleman or dentist, would lower himself to a disregard of their simple requirements. And yet, unfortunately, owing to the frailness of human nature, some of these very high-toned moral-charactered gentlemen do some naughty things.

Do you ask what are we going to do about this matter? We answer, just let it alone. All this class of matters take care of themselves. The world has always been cursed with quacks and impostors, and will be for some time to come, in spite of our code of ethics.

Could we gather all the dentists of our coast into our association, its benefits would extend to all instead of a few, and we would do more to elevate the entire profession, could we extend the fostering care of our association to all. Practically, our association door is open to all—even the ragged ends may come in; for, no matter what their past professional life may have been, if they stop advertising their special, personal merits and wonderful work, and cattle-show premiums for a few months, and technically comply with our code, we admit them. So far we think we do right, but when we are called upon to vouch for their good, moral character and professional attainments, then we object.

Again; the profession is open to all classes of quacks, frauds, toothsmiths and impostors, yet it lives and progresses, and no honest dentist need blush when he admits this fact. He is not responsible for these and does not vouch for their good, moral character or professional efficiency.

Enforcing the few simple requirements of our code has weakened and killed more dental associations than all other agencies combined, and is the most disagreeable and disgusting part of our association duties. It occupies important time and tends to create ill will and hard feeling among the members, and often results in dissentions and contentions that ruin the usefulness of the association.

It seems to us a prostitution of time and talent for a congress of fifty or one hundred dentists to spend hours of time discussing whether some unworthy member did some quack advertising; and having settled he did, then spend as much more time in settling the punishment he shall receive; and, having done so, then enforces a penalty about as severe as the little boy in house who makes faces at big boy in street. If a member of our association is a gentleman he will not violate our ethical code, and if he is not, all the punishment we can enforce will have as little influence on his moral cuticle as a flea bite on an elephant. Instead of reprimands or expulsions being a punishment, they often give such the notoriety they crave.

THERAPEUTICAL REQUISITES NECESSARY TO THE SALVATION OF EVERY DENTAL PRACTITIONER.

BY F. A. BREWER, D.D.S.

The great mission of therapeutics is in the fulfillment looking to the preservation of the condition of the human system, and whatever we may contribute toward such an object, so much shall it redound to our credit as true philosophers. But then, gentlemen, in order to carry out our mission properly, we must know and acquaint ourselves with the true normality of the system, or any part of it, when in health. By such acquaintanceship, we may be the better able to define any deviation manifesting disordered action. Of course, no practitioner can treat a disease intelligently unless he has become acquainted with its general or special characteristics; but it is not only requisite that he should familiarize himself thus specially, but also to fully observe the defined lines of limitation by which his treatment may influence according to need. But, unfortunately for the progress of our profession, our ranks are filled with many who fail to discriminate that line of demarkation, and their poor patient is forced to stand the brunt of battle. But our profession *is improving.* It would seem customary, with our practitioners, when a certain remedy was recommended for a special purpose, to over-indulge its use; but not only stop there, but make a hobby of it; ride it to death; ignoring entirely as to the effect it might induce by a variation of circumstances, as well as the damages it might inflict in another direction, thus making the remedy worse than the disease itself.

A few months since, a practitioner stated to me that he had seen a statement in one of the journals that sulphuric acid was

recommended as a specific for inflammation of the gums, and he believed he would try it. My time being limited, I merely remarked that I should employ it very carefully, as I deemed it very dangerous. A few weeks since, I met the same gentleman, and he informed me, upon inquiry as to his acid remedy, that he had made it a universal remedy in all cases suffering from diseased gums. I inquired if he regulated the strength in any of his cases. He said, no. His formula being one teaspoonful to the ounce. That man, we should say, is preparing for an active practice. A forethought has not entered this man's mind relative to the amount of acid already bathing that gum tissue, or the permanent injury his pet remedy would inflict upon those teeth; nor did he look ahead a little farther to ascertain if a far more efficacious and harmless remedy was not near at hand. *But he liked it,* and his neighbors liked it, too; and he intended to continue to use it.

Stepping in a man's office a few days since, I noticed an operator pour in a few drops of creosote into a bottle of tooth wash that he was preparing for one of his patients. Upon inquiry, ascertained it proved the best tooth preserver and deoderizer he knew of. I inquired why he preferred creosote to carbolic acid. He replied that it was an old stand-by, and had been popular; and, furthermore, he was of the opinion that it possessed better virtues for destroying any fungus that might collect upon the interstices of the teeth. In fact, said he, I find it a balm remedy for the prevention of any disease affecting the oral cavity. I remarked that perhaps he had better try it on the stomach, also. In a conversation with another gentleman a short time since, I was told that a better boon was never bestowed upon the dental profession than the introduction of carbolic acid. He had found it a sovereign remedy for prevention of decay in and around a filling after its insertion, as well as also a superior remedy for the prevention of scurvy of the teeth. I inquired of him if he did not think the scalpel and scaler would prove a better substitute? Oh, he replied, those dangerous instruments may be dispensed with, as they are not needed. Pressing my inquiry farther as to how his remedy, carbolic acid, prevented decay around his filling, he replied, decay is the result of a fungus, and by swabbing out the cavity well before the insertion, fungus will not enter there; they would become disgusted. I replied, I thought his theory a good one as to the fungus, *provided* he could control two disadvantages that would necessarily ensue, which was, the retention of the strength of his medicine, as

well as the doorway encircling his filling by the presence of his remedy. Oh, said he, I should not employ it crystalized. In fact, said he, it has become the true friend of my office. I replied, I feared it was like many other remedies in our list of *materia medica*, dangerous precedents in careless hands.

Thus we perceive the necessity of discreet men in our profession. Men who have the brains to reach farther on in the scale of selection as well as experimentation, and who will not become so attached to any one remedy because it seems to fulfill a certain requirement.

While referring to carbolic acid, gentlemen, allow me to digress by saying that this has become the darling remedy for every complaint known to oral science or dentology. If the gum tissue be but slightly congested, this crystalized diamond must shed its rays over and beneath its surface. If odontalgia manifests itself within the denture, no matter if the primary cause arise far remote from the locality of manifestation, carbolic must come to the rescue where the pain is noticed. If a nerve takes a notion to thrust its little head out of its locker, and take an innocent peep at a passing stranger, it must be treated to a submarine bath of this favorite liquid, and forced to take a back track at double quick. If, in the excavation of a crown cavity, some of the guardian sentinels of sensation manifest their dignity, their mouths must be stuffed with it as a pickle, to quiet them in their little bed. If a tonic is needed, carbolic acid is the antidote wanted. If an astringent, this special balm will fill the bill. If a tooth wash is called for, a mite of carbolic acid gives it *tone*. Ask its affiliator *why* he uses it, and, nine times out of ten, he will answer because it is *popular*. So magnetic is its influence, so devoted its friendship, that it will not only remain with us at our office, but persists strongly in following us to our club room, as well as parlor, and to the social party of our kind neighbor. Truly, is not carbolic acid *king* of all it surveys? Although it may possess many virtues as an antiseptic or disinfectant; though it may possess strength of power not found in other medicines of its character; yet there are times it should not be employed at all, as by its employment it may prove the very agency of thwarting the desired result that we seek for. Hence, I say, when picking up the bottle, stop and think whether you really need it at all, and whether there are not other medicines which might be more carelessly used, and yet prove *harmless*.

If we perceive some one of our profession employing iodine for any one special purpose, resting his belief that it is good

as a remedy, iodine is at one adopted for all such purposes regardless of varying circumstances. Now, gentleman such variation may prove one of the greatest reasons *why* it should not be employed at all! If chloride of zinc be recommended—not only as an obtunder of sensitive dentine, but for ulceration of gingivitis—it becomes at once the pet remedy under all circumstances whether the true primary cause of the origination had been removed or not, as also for every condition of inflammation. As for illustration: a lady patient finding the marginal gingival tissue surrounding a canine tooth to have become more than ordinarily inflamed in a day or two following the insertion of a filling, the disturbance having arisen probably through carelessness in applying the rubber dam, or from tartar having been driven in contact with the periosteal membrane, returned to her dentist to be relieved of her constantly increasing pain; forthwith a solution of chloride of zinc was applied to the inflamed part. As a result, the pain not only increased by additional inflammation, but an undue shrinkage of the tissue by the dissolution of the periphery of the alveola followed. *Why* he did not put a little carbolic acid in it, I am not prepared to say. A short time since a lady was suffering from slight accumulations of tartar causing her much trouble with some of her teeth. Here again, a diluted wash of chloride of zinc was given her in such strength that pain followed every application of it. I presume his idea was to destroy the tartar. I cannot conceive of any other purpose unless he had so habituated himself to its use, that he could think of no other remedy, or he may, like many others, have tried to carry his point by experimenting. A few strokes of a scaler would in this instance have eased the suffering patient, if not depletion, or the application of an anodyne might have had the desired effect. This done, the dentist immediately proceeds to filling the teeth, regardless of their surrounding conditions, failing to observe whether bathed in a constant flood of acid, or resting upon a rotten foundation induced through a strumous diathesis, or influenced by a highly nervous tempermament, or that of a low febrile tendency, all the while indifferent whether that system had been strained to its utmost by some mental tax, and thus caused his patient to shrink from the very touch or even sight of an excavator. Yet, notwithstanding these unfavorable conditions, we too frequently through our rules of office law, go through our manipulations, upon the case mentioned, with a guess *that'll do,* as Atkinson says. Yet, when the question in all its sacredness

comes to us in due shape, as to whether we truly fulfilled what the patient anticipated, as well as sustained our honor and reputation, are we able to say, Yes? Should we not rather have temporarily prepared those teeth, awaited another day, when we would have found our case in a better condition for the fruits of our operations to prove permanently successful. Gentlemen, through the ignoring of these special conditions as well as our hasty and indifferent manipulations, may it not be attributable the rising of that *creature* now gaining rapid headway in the East "*The New Departure?*" When we are so openly and plainly informed, that out of every two thousand cases of our operative manipulators seventy-seven per cent. are failures, does it not seem a bitter pill to swallow? If dental progression appears so unfavorable as claimed that so much time should be devoted to discussions upon the extremes of practice, does it not seem more unfavorable for us to be compelled to shoulder the charge that for upwards of fifty years the profession have been as "the *blind leading* the *blind?*" *How,* I would ask, may we require the right from wrong! unless we resort to *extremes,* and thus sift out the dross.

Science to-day has become a success, mainly through *practical effort* and *observation.* But if those special laws were so frequently and carelessly overridden as occurs in our profession to-day, we should *yet* be found with the meal at one end of the sack and the stone at the other. But our most able workers are at last awakening to their duty! It is said, gentlemen, that this is a plodding age, and soon there will appear a mineral balm, substituting the metal basis which we have for so long worked arduously and skillfully to form, an enduring monument of fame! It is hardly necessary to mention here the theoretical fancies urging this new creature onward, as they must be familiar to each one of us. But are we ready for it? Shall we lose that ambition for which we have so long been urging, and which, if this substitution once gets hold of us, must deteriorate? But should it not rather induce a serious reflection on our minds relative to the conditions which have led this check to our boasted progression? Let me ask if there has not been a little too much of that electro element in our manipulations rather than in the material employed? Have we been correct when allowing those two molars to reassume the same closely approximating position held previous to the temporary wedging through which we were enabled to insert a deep seated cervical filling, and in their normal position so

as a thread could with force but barely pass at their union, and that in a mouth whose test by litmus exhibits a redundancy of acid? Have we found ourselves justified in allowing those distal borders at the grinding edge of those bicuspids forming a thin flooring for sustaining approximal fillings to remain, which in a few months, or even years, disappear through natural forces? Or were we not in error when, through an arbitrary restrictiveness to one kind of metal basis, we attempted to insert a simple filling at the posterior approximating cervical region, and by doing so, and for want of the proper get-at-able as well as the needs of another class of material, we might have prevented not only a leak, but an eventual nerve exposure? All these have their bearing, which in their aggregation form a far more damaging element than the electro. And, gentlemen, to sum up as a finale, we need more space; we need a self-cleansing repelling form to the face of our filling.

A filling of gold inserted in one of my teeth, also two of amalgam, over thirty years since, by the late lamented Chapin A. Harris, are still doing duty; and the electrical influence is still so great in the gold filling, that the close approximation of a tack to its surface presents quite an unpleasant sensation, but nevertheless remains perfect. But one valuable lesson have I learned from their presence and attending effects, and that is the necessity that exists for space and voluntary power of self-cleansing.

In conclusion, let me say, gentlemen, go to work to-morrow determined to extend our investigations far in advance of the past, as well as using wise discretion in all of our manipulations, as well as moderation in our machinal applications, so that we may advance the standard of our claims, and thus thwart the opposing elements which bear down upon our noble ship, threatening to sink her.

Dr. Lane: I think it is hardly fair for the idea to go out that only 23 per cent. out of 2,000 operations on the teeth, are successful. I think, with all our failings, faults and shortcomings, it would be giving ourselves rather a bad name. I believe in giving the profession credit for what is due it. That may apply to some who call themselves dentists; but I don't think it applies to our profession at the present day. I think we have more like 77 per cent. of successes in cases we treat.

Dr. Robinson: I believe that 87 per cent. of every filling

that Dr. Lane puts in will be failures. It is only a question of time. It may be 5, 10, 20, or 30, or 100 years. In the estimate given in the paper, no time is stated, and that is where the rub comes in. But I believe the fillings of the best dentists do not last anything like as long as we think. And I base this statement on the estimates of others.

Dr. Lane: I think the idea is just this: that success depends upon the arresting of the disease; the preserving of the organ for the time being. We do not always expect that a tooth is going to be preserved through the natural life of the individual, but yet we consider our operation, so far as it goes, a success. It may be we put in a temporary filling, or have treated it in some way to make it last for years, and it is a success so far as it goes. We do what we undertake to do. We need not say that the operation is not a success, because its influence is not permanent during the individual's lifetime. An abscess may occur; and a surgeon or physician may be called to treat that case; treats it medically, and cures it. He does not say that an abscess will never occur in the same place or in the same individual again; yet it is a success so far as the treatment of that individual or special case is concerned. And so it is with our teeth. If we treat and fill a decaying tooth, and it is good for five years, it is a success. Many of them are good for a lifetime; many for only a few years. Yet the majority of them, I hold, are good not more than five years; the majority of fillings put in by the good operators of the day. I think that is a success. There are not many of us that would be willing to part with one of our dental organs for five years.

Dr. Brewer: In making the report that I did from the statement, it is not to be individualized at all; and I did not mean one man or another; I took it in the aggregate. And, right where Dr. Flagg comes from, the very city from where that paper comes, and from which this new departure issued, the City of Philadelphia, I saw the poorest work and the worst character of dentistry carried on.

CELLULOID PLATES.

BY D. CAVE.

Gentlemen of the California State Dental Association :

The demand in my practice for artificial dentures, although small, I often meet with cases where gold and platina, and even vulcanite, are impracticable. I therefore felt the want of a material better suited to most cases, and came to the conclusion to experiment with celluloid, against the use of which I had been greatly prejudiced; thinking that it invariably warped, and in nine cases out of ten became porous, and that many plaster casts were broken by the great amount of pressure necessary to mould it, and a great many other faults too numerous to mention. But my doctrine being "not to be the first by whom the new is tried, nor yet the last to lay the old aside," I ordered immediately a steam apparatus and a sufficient number of blanks to meet the demands of most cases, and commenced my experimental work, which, of course, in the beginning, although following strictly the instructions accompanying the apparatus, were not crowned with perfect success. But I soon found out the principal points necessary to be observed for obtaining a perfect plate, and knowing that there are persons just as prejudiced against its use as I have been myself, simply by hearsay, I thought it my duty to bring my views before the Convention in justice to the material itself.

The following are the principal points to be observed in the working of celluloid:

First—Waxing up the Cast.

I make my casts of the ordinary coarse plaster, and when

perfectly dry, if for an upper plate, full or partial, I fasten my air-chamber immediately by the aid of two pins on the desired place; and after the articulation is made in the usual manner, I wax up accurately, taking care to prevent the wax over the air-chamber from raising up while cooling, so that not too much celluloid is wasted there. I then cleanse the teeth of all surplus wax, which is best done by the aid of oil of lemon, so that they could be perfectly retained by the plaster when placed in the flask, thus making moving out of place impossible.

Second—Opening of the Flask.

After the plaster has sufficiently hardened, I place the flask in warm water, and heat until boiling point is reached, because I have found that the flask being heavier, and there being a great deal more plaster in it than in the ordinary vulcanite flasks, it requires a higher temperature to soften the wax sufficiently, so that in opening no particles of plaster should come off of the cast, which would adhere to the wax when not sufficiently heated; then I cut large exits not far from one another; also, all thin projecting edges of the plaster, and in partial plates I cut off so much of the plaster teeth of the cast that breakage would be impossible.

Third—Pressing or Moulding by Using the Lower Valve Only.

I now place the flask in the steam apparatus, after having previously adjusted a proper blank to suit the case, which should always be taken heavier, so there should be a good deal of excess. I then close the apparatus and light the alcohol, using the *lower valve* only, and as soon as the blank softens, which takes place long before steam escapes, I commence turning the handle gently, continuing as fast as the blank yields, increasing the pressure gradually toward the closing of the flask. This mode, however, takes about ten minutes longer than by the use of both valves, but I never have a porous plate.

Fourth—How to Know that the Flask is Perfectly Closed.

I introduce the empty flask in the apparatus, place the plunger on the top and close it as if ready for use, and after the piston is turned down tight on to the plunger, I cut a horizontal mark on the piston, level with the shoulder of the apparatus; also a cross mark, which I extend on to the

shoulder, so that in closing there can be no mistake when to cease turning the handle, even if apparently a great deal of pressure is required to be continued.

Fifth—How to Cool the Flask.

After the plate is moulded and the piston turned home to the mark, I raise the valve to let off steam, and usually let it cool over night, which positively prevents warping. But if in a hurry, I cool gradually for about an hour, then place in cold water, and wait until the stone is cold before removing the pressure. The whole of which can be accomplished in two hours, and will insure almost as good results as in the first way.

Care should also be taken whilst working at the plate, not to leave it dry too long a time, and as soon as finished, keep it under water until the patient calls. I have had plates over a week in water, and when called for, the plate adapted itself perfectly, not showing the slightest change.

A few words why celluloid should be preferred to rubber may not be amiss. In working celluloid I can use plain teeth, avoiding grinding or joining almost entirely, and I am capable of placing them in a more natural position than gum teeth, which is so very essential in all cases, more especially in partial plates, causing the work to be done quicker, and reducing the expense of the teeth, doing away entirely with black joints, which troubles so many dentists in their vulcanite plates.

The next thing to be taken into consideration is, that celluloid is a more perfect imitation of the natural gums than rubber is, and therefore can be used in all cases where vulcanite would be unsightly. It does not cause the gums to become inflamed as rubber does, of which fact many of my patients have called my attention to, since wearing celluloid plates. It is also susceptible of a much higher polish than vulcanite with a great deal less exertion, making it possible for the dentist to polish his plates perfectly, thereby giving the patient the means of maintaining his plate free from tartar without much trouble. Many of my patients prefer it to vulcanite on account of the odor, and as far as strength is concerned, anybody who has ever tried it, knows that it is much tougher and stronger than vulcanite. Repairing does not change the durability of the plate, while everybody is convinced that a vulcanite plate, after having been repaired two or three times, becomes almost as brittle as glass.

Considering also the reduced prices of celluloid, it renders it a fit material for cheap plates, exempting at the same time the dentist from the tax of the monopoly of the Vulcanite Company.

Gentlemen, these are my views on celluloid, hoping that other members may be stimulated to test the material and its merits.

DR. RABE: I have had three years experience with celluloid exclusively, in order to get rid of Bacon, but I must say that the rubber is surer. I have come to the conclusion that it is cheaper, better, more reliable and surer to use rubber than celluloid, though I believe I had just as good success as nine-tenths of the dentists. I found that it failed in partial sets, where you require to have the teeth buried a trifle in the gums, for instance, in bringing the flask together, in spite of everything I would do, a half of my flask would pass into the plaster somewhere, and would not pass up close to the gums. I have tried the different methods that I could think of to obviate that; sometimes I would put my flasks a trifle apart, the thickness of two or three sheets of letter-paper, and then have scraped that off of the plaster before I brought the plaster together. Sometimes I would cast it just right in that way, but it was guess work. I got so that I could use gum teeth without breaking or injuring them. But three years trial of them has cost me more than the other methods, and I never could depend upon it. I have used the steam apparatus, and also the hot air, and I prefer the hot air, because I get the best and most perfect plates with it.

That paper states that a finer polish can be got on celluloid than on rubber. I never could do that; and I never found but very few plates that kept that polish over six months. But you can get the gums and a set of teeth to imitate the natural teeth, and by studying the features you can arrange these teeth almost like the natural ones, especially if you can see the teeth of any of the other members of the family, or if you have seen the teeth before they were taken out, and you can arrange them so as to make them look as much like continuous gum as possible. But in the future I shall use the rubber every time.

DR. ROBINSON: Has anybody seen celluloid plates after they have been worn from five to seven years? and if so, how do they look?

Dr. Dunbar: I have seen some worn two or three years, and they looked to me like old sole-leather. The only difference is that the plate is translucent. It seems to be like glass, or like gelatine, with little cloudy portions of vermillion in it. They are certainly the most contemptible-looking old plates that anyone would wish to see.

Dr. Holmes: I have experimented in celluloid, and it has cost me a great deal more money than rubber, and I have had more failures than successes. But I use it in a great many temporary cases, where I want to match or imitate the gum. In regard to crowding your teeth into the cast, do you bury your teeth into the lower part, or take them off at the upper?

Dr. Rabe: I have done both ways.

Dr Holmes: I have always buried my plain teeth on the cast. I have never had the trouble you speak of.

Dr. Rabe: Supposing you want to have room there, and the teeth are close to the gum and the bite is short, how can you force the celluloid through to make the gum?

Dr. Holmes: You spoke of matching the teeth to the gum. I have had no difficulty in crowding celluloid into place. But if you adopt the rules of the Celluloid Co. you will make a failure nine times where you succeed once. You cannot do anything with those blanks without immersing them in camphor for one and a half or two hours; and then I use one of those hot-air apparatuses, and then I put it in a cup and use glycerine, and in that manner you can drive celluloid just where you wish. I have seen celluloid plates that have been in for four years, retaining their polish as perfectly as rubber. I have also seen those that have been in but two years that were like leather, only I think the leather had the advantage of the celuloid. In temporary cases, where they are to remain in for a few months, I think they are very valuable in many instances.

Dr. Rabe: Perhaps Dr. Younger could tell us something about the method of certain gentlemen in the East, of working it over metal dies.

Dr. Holmes: I have tried them, and do not want them.

In regard to metal dies, I have examined that subject from the very first, in some manner. In the first place, it is with great difficulty you can get them up and you must have some porous substance for your gasses to come through, if not you will have it right on your dies every time.

COMMUNICATIONS.

New York, May 4th, 1879.

Dear Brethren:—In response to your request to be present with you at your coming meeting, or send you a paper upon some subject interesting to dentists, with your kind permission I will attempt the latter.

From what I know of the status of dental education, and the practice of dentists in general, I take it that there is no subject upon which they need instruction equal to that of the local expression of the inflammatory process, variously denominated "Ulitis," "Periostitis," "Pulpitis," "Alveolar Abscess," and "Necrosis."

To appreciate the inflammatory process, it is important to be in possession of a knowledge of minute anatomy that has as yet been compassed by few, even among the noble brotherhood who have given their lives to the study of healthy and unhealthy manifestation of function in the living animal body.

Mass generalizations and partial investigations have taken such strong hold of teachers and pupils that it becomes a thankless task to plainly indicate the lack of reliable knowledge that so universally prevails with teacher, pupil, and practician.

I sometimes regret that diplomas have ever been given, not because I am opposed to recognizing the degree of progress that any student has made, but that the form of the diploma is so constructed as to indicate a greater attainment than any one individual can claim to be entitled to.

Every inflammation is the result of the death of some portion of protoplasm; in other words, a true necrosis.

It would involve too much time and intense labor to condense and tabulate the proofs of the statement just made. Please bear with me, then, when I plead with you to disregard the prevailing doctrines in the text-books and orthodox schools. In these sources of instruction we are told that nocrosis is the death of a considerable territory of osseous

tissue that has been deprived of the free circulation of the blood, from whatever cause; and that the territory is limited by the extent to which the blood current is obstructed; and the treatment universally advised is *expectante*, a simple waiting until a line of demarcation has been fully established, and the dead territory completely separated from the living bone, before any attempt should be made to remove the so-called "*sequestrum*" or dead bone.

The doctrine of the books upon "Necrosis and its Treatment" is the equivalent of that aspect of moral teaching which permits the sinner to plunge deeply into iniquity in order that he may be duly prepared for hearty repentance, instead of the true teaching which counsels every one to cease sinning just so soon as the act is discovered to be sinful. In medicine, as in morals, we should correct a wrong action the instant we discover it to be wrong.

Take a case of any local inflammatory action and all that is necessary to abort the inflammation is to cut off nerve supply and blood supply. The simplest method of effecting this is by compression, or the application of cold to the degree of arresting sensation and blood circulation. If this be thoroughly done, the inflammation will be aborted in every case in twenty-four hours, and the parts will then return to their normal condition by the removal of the compressors or the cold body, as the case may be. The fingers, toes, and limbs in general are the localities in which this treatment is specially indicated.

In the gums, periosteum, and pulps of the teeth, depletion is more advisable for the removal of the local inflammatory action, because of the impracticability of bringing compression to bear in these localities. The only ambiguity about such cases is the difficulty of determining the exact point of inception of the inflammatory process in gum, periosteum or pulp tissue. The safe way is to deplete by a sufficiently vigorous cutting entirely through the territory involved in the inflammation well into the healthy adjoining territory.

The great majority of cases do not apply to us early enough to enable us to avail ourselves of the great advantage resulting from prompt and thorough treatment in this manner. But we have no new principle or radical difference of proceedure to deal with, other than in degree, where the process has proceeded to the point of exudation of pabulum at the seat of the local death of tissue.

Let us instance a case of a superior single-rooted tooth, that

began to feel uneasy, inducing the patient to bite upon it, the tooth becoming elongated and tender, and afterwards painful to such degree as to compel the patient to seek our advice. Upon examination, we diagnose death of pulp and inflammation of the peridentium. The proceedure to adopt in this case is to gently tie a strong cord around the neck of the tooth and request the patient, or an assistant, to pull upon it until the pain entirely ceases. Then, with a sharp drill, go through the lingual face of the tooth to the pulp chamber, which will generally be found to be filled with a necrotic pulp. Then with a "Morris" drill, sufficiently long, go through the entire length of the root, and beyond the foramen at least one-eighth of an inch. In the vast majority of cases, at this point, the pain will cease and the tenderness be markedly reduced, when you may remove the ligature, carefully clean out all debris and dress with your favorite disenfectant; mine is oil of cloves and creosote in equal parts.

If your patient is tolerably healthy and accustomed to be out of doors, you may fill the tooth at this sitting with good success; but if the patient be cachectic from any cause—overwork and under rest, over rest and under work, or malarial infection—I would advise deferring the filling until the constitutional condition was restored to a healthy standard.

All the cases of bad necroses that have come under my care have been attributable to neglect on the part of the patient in seeking advice early enough to prevent necrosis, or, on the part of the practician, by recklessly extracting teeth, or making other operations on subjects laboring under the various cachexia referred to.

I have now two cases of terrible necrosis of the inferior maxilla, resulting from the injudicious destruction of a pulp in one instance and the extraction of a six-year molar in another; both patients in unhealthy, anemic conditions from malarial poisoning and scrofulous constitutions.

I saw the first case eight days after the destruction of the pulp. The pain had been continuous, and was still so severe as to deprive the patient of sleep and the taking of food, and extended from the right inferior lateral incisor to the ascending ramus of the jaw on that side. The first and second molars had been extracted at the urgent request of the patient, in the vain hope of relieving her of pain. I proceeded at once to syringe out the cavities of these sockets with warm salt and water, when I discovered a tendency to separation of the gum from the alveolar wall. By following up this chasm with

a probe, I made out a satisfactory diagnosis of necrosis of both plates of the alveolus. I filled the entire chamber with aromatic sulphuric acid from a syringe, and introduced pledgets of cotton, saturated in creosote and oil of cloves, to keep in the dressing and the channels open, over all of which packs of cotton, saturated with wine of opium, were placed, and the patient advised to retain it as long as possible without swallowing the saliva, and then to discharge it. I then advised the attending practitioner, who was present, to remove the dressings next day, cleanse thoroughly and re-dress with wine of opium and cotton pledgets, as before, and within a week to remove with a burr all the necrosed portion of the bone. Four weeks and four days elapsed, when I was requested to see the case again, and found, to my surprise, that no attempt had been made at removing the necrotic bone. This visit was on Thursday. I repeated the dressings in the same manner as at the first visit and instructed the attendant to dress daily with wine of opium and cotton pledgets to keep the fistulæ open, and to bring the patient to my office on the next Sunday morning. This appointment was kept, and, with the assistance of my two sons, and in the presence of several practitioners, we proceeded to remove the necrotic portion by the following method: A burr, an eighth of an inch in diameter, deeply and coarsely cut, was used with White's engine and inserted in the socket of the anterior root of the first molar, and was carried to the end of the socket with high motion, (about 1,500 to the minute). The dead bone was carefully burred out to the soft tissues, on the inner and outer walls, so as to completely separate the posterior and anterior portions of dead bone. After this was accomplished, the soft parts were carefully peeled off on the outside to a point midway between the inferior dental canal and the base of the jaw, and on the inner side to the junction of the variable and permanent portions of the jaw. Then, with a smaller burr, separation was easily effected, and the sequestræ readily removed by tweezers. The chasm was cleaned by syringing with the warm saline solution, carefully dried out with bibulous paper and filled with aromatic sulphuric acid, the cavity packed with dry cotton and patient sent away, with the request to have her dentist dress it with wine of opium daily and to report in a week, which she failed to do in person, but her professional attendant informs me she is doing nicely and has a good appetite. I expect to see her again, and have every confidence that this will prove a perfect success, as so many other similar

cases have done. I should have stated that I ordered her to take two grains of sulphate of cinchonidia, morning and evening, for at least two months. When I first saw her she was not able to leave her room, but is now smart and feeling well.

The other case was that of a little boy eight years old. The only difference in the management of the two cases consisted in the difference of presentment, the boy having an abscess extending from the socket of the right inferior first molar to the alveolar tissue of the neck on that side, which was opened and discharged freely. The cavity aromatic of the abscess and the sockets of the molar were filled with sulphuric acid, as in the other case, and instructions given to the family dentist to treat with wine of opium for a few days, and burr out the necrotic portion. This case occurred last Tuesday; I have had no report since. I also advised the sulphate of cinchonidia to be given in this case for at least one month.

WM. H. ATKINSON.

Members of California State Dental Society:

SIRS:—I am reminded of the near approach of your annual meeting, and not only my opportunity, but my pleasure to again communicate a few thoughts connected with the interests of our professional life. With the rapidity of time come the changes and interchanges which are common to the lot of mankind in general; and I am called first, to note the sad and sudden demise of our co-laborer, Prof. J. H. McQuillen, of the Philadelphia Dental College. I do not need to add words of eulogy, which have doubtless passed both in your minds and out on your words. Certainly, those of us who knew him personally, admired his untiring energy and his true devotion to the interests of dental education. His influence has gone out through all the lines of professional attainments, and the standard of our profession has been *surely* elevated by it. I am sure I am safe in saying no one of our number has left us since the days of Chapin A. Harris, *who* will be *more* missed, because of his usefulness, than Prof. McQuillen. Inasmuch as he has commemorated his life by his works of helpful labor, we can safely emulate him. Whatever may be the future of the college he was so instrumental in establishing, the work of *truth* will last. The name of Harris reminds me of the

movement which has lately taken place at Baltimore, which is the union of the Maryland Dental College with the Baltimore Dental College. Whatever may have been the necessity of the foundation of a second school at Baltimore, it has doubtless been productive of much good, if no more than to stimulate the senility of the senior one, and to have been the means of bringing to its body the warmth and energy of the younger one, which gives at the start a sure indication of renewed life. You are aware that the educational child of dentistry was first cradled by the Baltimore Dental College, and its father was Chapin A. Harris. It was the outcome of an honest, earnest desire for the elevation of our profession. Some men more than others bring to their calling through the higher aspiration, a larger potentiality, and thus provide for the coming emergencies which so often appear at the ending of their earthly career; and the question so common, "Who can fill their places?" it is an irreparable loss, etc. Such men, *only* cease from their labors here, to be taken up in the multiplied labors of those who have been reciprocal co-laborers, so that the work of *real value* to the world is secured in its continuity. That the desire and the demand of an advance movement is plainly indicated by all of our several dental schools, and of the creation of additional advantages coming to the front in the addendas of dental teachings in medical schools, and what is perhaps better still, to our largely endowed Universities, is very appearent. I am sure these things are to enhance our possibilities even beyond our most ardent hopes; and while these powerful instruments are accumulating on the horizon investigations of recent dates are bringing to us *demonstrated* knowledge which gives for the first time an actual basis on which to begin an incrontrovertibly scientific dental organization. If we will reflect on our researches and those formerly published we will at a glance be aware that no bottom rock has been demonstrated on which to rear a histological structure of the human tooth; we have rested on *much* doubtful hypothesis; but now thanks to the intellect of Dr. Carl Heitzmann, of New York, a Germanly educated histologist, "brooded over (as our mutual friend and earnest co-worker, Dr. Atkinson, would say) by the angels;" he has with the microscope of higher powers and a new method of preparing specimens (not common) fresh from the human body, *Wet* vs. *Dry*, added to his educated discriminations, aided by honest and earnest pupils, has brought to our open vision, for the first time, the absolute demonstrated

truth, that the human tooth is a living organism, which fact has and will continue to answer the many vexed questions which have until now remained unanswered. I refer first to the published papers of Dr. Böedecker, a modest, honest and earnest German pupil (a dentist), in Dr. Heitzmann's laboratory; he has shown by the cuts published (drawn from specimens prepared as I have discribed) that the living matter does penetrate into the enamel territory, which has been considered as only crystaline. Does not this knowledge answer the question, what is the cause of "tooth edge?" These papers are so full of profitable information that no one of us can afford to be without the knowledge they contain, (see Cosmos, Nos. 11–12, 1878, and 1, 1879). Another outcome of Dr. Heitzmann's cultured discriminations has been the Etiology of Dental Caries, published by Dr. Abbott in the Cosmos, Nos. 2, 3, and 4, 1879, which may, or not, be fully sustained in all its statements. It is claimed that caries attacking tooth structure is in the first instance, chemical, in the second, inflammatory. Is not all solution and dissolution of human tissue, chemical? and as applied in this field is only the action and reaction of relations involved. And does not all this let in a flood of light? does it not show that physiology is only *binding together* the elements, and *pathology* the *unbinding?* and no change in their character or potentiality. I can assure you gentlemen we are enjoying a rich feast in Dr. Heitzmann's teachings. Through the untiring and never flagging devotion of Dr. Atkinson to the true interests of dental science. Several classes of dentists, numbering ten to fifteen, have been formed, and have been and are now in active operation. The course consisting of fifteen lectures occupying two evenings each week. It may be interest to know something of the *modus operandi* of these teachings: for the first lecture, we are gathered in Dr. Heitzmann's laboratory, confronted by some ten to fifteen microscopes arranged on tables, each with its prepared specimen, showing principally the foreign substances, viz.: shreds of cotton, wool, dirt, etc., that are liable to accumulate on the field, among the substances of histological structure, these are shown for the purpose of familiarizing the student, that he may learn to discriminate. The first hour and a half is occupied in the transfer of what is seen on the field of the specimen (particularly that part to be embraced in the lecture following) to our drawing books; and to aid us in this transfer we have on a small slate a rough sketch

with description of the things which we are expected to see. This may seem like too much detail; in a word, it is to bring us face to face with nature, for our teaching in dental science. Some changes have taken place in the organized plan of dental societies.

The Constitution of the Odontological Society of the City of New York has been revised. It may be known that the original limited the membership, and increased their body by making associate members. Now, by the change, the active members are to be unlimited, so far as receiving them from the two cities of New York and Brooklyn, no one being eligible outside. This will, doubtless, remove some obstacles of its progress, and enhance its usefulness. As a body of sociable gentlemen, they are *Amazonic.* The subjects for discussion invited before them have made the dental atmosphere quite lively; and they, doubtless, bring some "wheat" from a large amount of "chaff." The organ of the Society, *The Dental and Oral Science Magazine,* has ceased to be, and its proceedings are again being published in *The Cosmos.* Rumor has it, and no doubt there is truth in it, that the Westcott charter for a dental school, long ago secured, was about to expire by limitation, and its senility, or whatever latent germ it may have buried behind its mould, is to be operated upon by an attempt of transfusion of the blue blood of the Odontologicals. Perhaps it may be of use, if no more than to serve as a counter-irritant to the New York College of Dentistry. Time will develop its mission.

We are promised an enthusiastic gathering at Boston, June 5th, in the union meeting of the ten New England Societies. (The spokes always center at the Hub.)

The public clinics held at S. S. White's depot were never more prosperous; its attendance numbering from forty to one hundred and forty monthly. They are certainly an adjunct of power for good.

The First District Society of New York, was never more active and productive in usefulness than now; its membership has increased both in quantity and quality. These facts clearly indicate that no large city or town can afford to be without a healthy dental organization; and to be without it indicates an absence of activity which should not be permitted. Many thoughts of interest to myself are vivid to my mind, which might find an outlet could I enjoy the pleasure of a personal presence among you; but I am now reminded of my

longevity here exhibited, and must close this letter, with many good wishes and sincere fraternal regards to those personally known, and not known. I call all active, earnest dentists my friends; and another year has not lessened my love for all that pertains to our welfare.

Fraternally yours,

GEO. A. MILLS.

DENTAL LEGISLATION.

BY HENRY C. DAVIS, L. D. S.

To the President and members of the California State Dental Association:

GENTLEMEN: Much has been written and but little *done* to secure legislative protection in the United States, and although many schemes have been advocated, yet, with the exception of one or two states, (I am open to correction here,) the fact remains that there is not any standard of qualification required; so that any person whom the inspiration seizes can, at a moment's notice, put out a shingle, and constitute himself *a dentist de facto* and *de jure*.

It is a well-known fact to us all that our profession in California is, as regards numbers, fully supplied, and with the influx from abroad, influenced no doubt, to some extent, by our climatic and supposed financial advantages; together with the number of students who are constantly being turned out of our offices, they in turn to return the compliment to others; therefore, if some system of legislative protection is not secured, the outlook is anything but promising.

In Canada, the dental profession has had legislative protection since 1868, and as regards the result of said legislation, I will refer you, later on, to a letter received by me from Dr. Geo. W. Beers, of Montreal, Secretary of the Dental Association of the Province of Quebec, of which Association I have the honor to be one of its licentiates. My former partner, Dr. Aldis Bernard, deceased, of Montreal, with whom I was associated from 1866 to 1870, was the father of dental reform in Canada. As for back as 1842, he strove to get a clause inserted in a medical act, then before the legislature, to regulate the practice of dentistry in Lower Canada; and it was mainly

through his efforts, he being one of the most prominent and able speakers in Canada, that the Act of Incorporation of 1868–69 was passed. This was in Lower Canada, or Province of Quebec. Simultaneously with this, was the passage of an Act in Upper Canada, or Province of Ontario. Through the kindness of Dr. Beers, I have received the Acts of Incorporation of the two Provinces, which will be read later. In the main, they are similar, with the exception that the Province of Ontario provides, under their Act, for a dental school, which was inaugurated in 1876, I believe, and is now in successful operation. The great advantage to the dental profession of Canada, and which I hope to see in force in our State, is that their legislative enactments all matters pertaining to dentistry are exclusively under the control of the Association. The Upper Canada school has advantages over our American colleges, inasmuch as it requires that students must pass a "high school entrance examination" before matriculating, and after 1880 a "high school intermediate examination" will be required, which all must admit is a move in the right direction. Also, all students in the Province are compelled to serve in the office of a licentiate two years, inclusive of the time spent in attendance upon medical lectures as specified by the Board of Directors, and to have attended *two full* courses in the dental school. In the Province of Quebec, they did not make provision for a dental school, which they will apply for at the next legislature. Under a form of this kind, there is no opportunity for a number of dental schools to creep in, which would have a tendency to impair the usefulness of the one college; and here let me say, if not irrelevant, that if we are to have a dental college in this State, I trust it may be many years ere we possess another, so that we can give to the *one college* our undivided support, and the tone and dignity that an institution of the kind should possess. We have only to look at the great number of medical schools in the United States, and see how many are properly endowed, and how few have anything but a local reputation. But I fear I am wandering from my subject. I will not trouble you by going further into the history of dental legislation; but will say that, to make it practicable in California, it must be done by united effort. Make the standard of qualification something after the pattern of the Canadian system. Here, with your permission, will read the Ontario Act, which is a little more enlarged and comprehensive than that of the Province of Quebec. * * * * *

By allowing all persons a license who will have been engaged in the practice of dentistry five, or even three, years preceding the passage of the Act, we will harmonize all elements and the future will be assured. No person, after the Act has passed the legislature, will be allowed to open an office, or perform any operation, under *any pretext* whatever, except those who are legally entitled to do so. I will conclude by saying that I have given a brief outline of the Canada Enactments as something to base our own Act upon. Their system has stood the *crucial* test of experience, and the result has fulfilled their most sanguine expectations. May we do likewise.

AN ACT TO REGULATE THE PRACTICE OF DENTISTRY IN THE STATE OF CALIFORNIA.

The People of the State of California represented in Senate and Assembly, do enact as follows:

SECTION 1. It shall be unlawful for any person to practice dentistry in this State for compensation, or otherwise, unless such person shall have received a diploma from the Faculty of a Dental College (or a Medical College, with five years of practice, including pupilage, in dentistry) duly incorporated under the laws of this, or any other of the United States, or foreign country, or a certificate of qualification issued by a Board of Examiners, to consist of five members, three of whom shall be elected by The California State Dental Association; and two of whom shall be appointed by the Governor.

SEC. 2. It shall be the duty of said Board to meet annually or oftener, at the call of three members of said Board; thirty days' notice having been given in some newspaper of general circulation, published in the city of San Francisco.

That all applicants for certificates to practice dentistry may present themselves for examination and the evidences of their qualification. Said Board shall cause to be kept a record of the names of all persons to whom certificates shall be issued, and the evidences of qualification; and a certificate, under the hand of the person having the legal custody of said record, under the seal of said Board, shall be evidence in any Court of this State.

SEC. 3. Any person who shall practice dentistry within this State for compensation or otherwise, without having complied with the requirements of this Act, shall be guilty of a misdemeanor, and upon conviction thereof, shall be fined not less than $50, nor more than $200 for the first offense; and upon conviction of each and every offense after the first offense,

shall be fined not less than $500, nor more than $1,000, and imprisonment for a term of not less than days, nor more than days; *provided*, that nothing in this Act shall apply to any person now engaged in the practice of dentistry in this State, or to physicians or surgeons, from extracting teeth.

SEC. 4. Upon trials of prosecution under this Act, it shall be incumbent on the defendant to show that he has complied with the requirements of this Act. All fines collected for violations of this Act, shall be paid into the County Treasury of the County where the offense was committed, and be placed to the credit of the School Fund in said county.

SEC. 5. The said members of the Board of Dental Examiners, and the officers thereof, shall receive no compensation from the State; but they shall collect from each person applying for a certificate under this Act, a sum not exceeding $20, to be applied to the necessary expenses of said Board, and for carrying on the provisions of this Act.

DR. DENNIS: It is not the intention of the Committee to make it obligatory upon any member of the profession in the State at present to go before the Board and pass an examination. Any gentleman in the State who has been practicing dentistry, if he desires to do so, can get a certificate.

All of those in the practice of the profession in this State up to the time of its passage, are not interfered with. It simply debars the coming in of men from other States, where similar laws are in operation. It is not intended to affect anybody in the State up to the time of its passage.

Some of the members of the Committee disagree with me in that; but I have always taken that position. By that method we shut out all opposition; and I can see no reason why any member of the profession cannot sustain that Bill. I am positive it will be one of the greatest steps, and one of the brightest things we have ever done.

DR. MCLAIN: As this Bill is now drawn up, it does not contemplate retro-active measures, as it allows practitioners at the time of its adoption to practice right along without an examination. It is a Bill almost identical with the one that we attempted to pass through the Legislature of Louisiana. We succeeded in getting it through the Assembly, but failed in getting it through the Senate, simply for the reason that the Senate would not interest themselves in the subject; and they

wanted to be feed; and the dentists did not feel that they should be burdened with that tax of feeing these Representatives. That is the reason it fell through. We tried for a number of years to get it passed; finally succeeded in passing it through the Lower House; but it died still-born, in the Senate, for that reason.

In your endeavors to pass this Bill, you will find some difficulty; and there will be some trouble in getting it before the Legislature. But I advise persistence. If you fail at one session, try it at the next, and you will finally get it through, and it will be the salvation of the profession on this coast. For without it, I am confident that in a short time this State will be flooded with practitioners coming from every quarter of the globe, for the reason that they think that this is an unoccupied field; that this is a golden coast, and they want to make the harvest. Others come here for their health; and they are so much benefited, they feel like remaining here, which was my case.

Dr. Younger: I think that the effect of that Bill is entirely neutralized by that clause which admits every one at present practicing, to continue practicing. We want to protect the present generation — those who are now the victims of bad dentistry—not for the purpose of protecting our grandchildren.

Dr. McLain: You would then find that it would be an *ex post facto* law, which would be unconstitutional; and you could never pass any such Bill.

Dr. Sichel: I think there is plenty of room here for other dentists. Where a physician has only one patient, the dentist has thirty-one.

Dr. Griswold: Would it not be well to state in this application what this examination should consist of, so that dentists who are not graduates might prepare themselves for the examination when the Bill should pass. I believe there are dentists in the State who would be glad to prepare themselves for such an examination.

Dr. Robinson: Whatever is accomplished in this way will be far in the future. I believe in fixing a high standard of qualification, but I do not have the same confidence in the means of doing it as you have. If you believe in it, as I have confidence in your judgment, I will work heartily with you in

this, believing that it can possibly do no harm, and feeling that it may give us a boost in the right direction.

DR. C. C. KNOWLES: I think it would be well, if this is adopted, that the knowledge of it should not go out at once to the other States, because this city of refuge would be overflowed soon, for they would be free from all examinations after the passage of this act, if it does pass. I have no doubt that we all feel that something should be done to raise the general standard of our profession, and that every individual who practices dentistry should be qualified to do so. But I fear that these local and especial laws will effect but very little. You may drive some few out of the State, if the law is of sufficient power to drive, and if it be put in force as it is claimed it has been in some of the older States. During thirty-eight years of experience in life, some of which has been adverse as well as successful, I really know of no better way to raise the standard of any profession than to make it within ourselves respectable. I do not believe it has ever been done, or ever will be done by any legislative enactments. I do not believe that anything of that kind is of any service, except to irritate, torment and vex a class of men that are perhaps as good as we are. I believe that is admitted. It shows a rather egotistical spirit for us to say that we should be exempt from the operation of such a law, and we made a discrimination against others whom we claim are not as good as ourselves, and thus legislate for future generations. It seems to be making provisions for those who are to follow us, while the people living in that age perhaps may be as well qualified to judge of their fitness as we are.

I would like to see a moral sentiment in the community; I would like to see a professional sentiment within our own body sufficiently powerful to correct these outside evils. You will find men everywhere you go, who are unable to discriminate, because of their ignorance. They do not know what constitutes a good dentist; when they see a sign up they go there, without any knowledge of the distinctions that we make, and that ought to be made, simply because they are ignorant. I believe that if we can educate the people in regard to these things, make them better understood and better taught in our schools, if need be, which is one of the things that ought to be done; if some of these things pertaining to every-day life would become a matter of special education; that information might be published in regard to our profession and the neces-

sity of taking care of the teeth, the people might be made better acquainted with what they need, and their attention would be awakened as to the proper sources from whence our supplies in this respect would come; and in this way poor dentists would be thrown out of business, because their occupation would be gone. I apprehend that when we come to the bottom of this matter its real object is to protect ourselves and our pockets rather than the dear people. But, in some practical way, by some sacrifice on our part, I believe this thing could be better accomplished than by any laws of this character. If twenty or thirty dentists of this city would combine together, and hire a building that can be used for the purposes of its local society, and hold daily clinics, having persons detailed to attend to it, especially in relation to our eleemosynary institutions, a great deal of this work that goes into the hands of men that are incompetent would be better done and the people really benefited. But I think such a thing as that is impracticable, because I think every one of us would keep away from anything of the kind, to save our time and money.

DR. DUNBAR: I think the mistake in that draft of the Act is in not requiring that all dentists exempt from examination under it shall have practiced in this State a certain number of years, rather than allowing all to be exempt who are in practice at the time of its passage. I think it has been the custom in other States to exempt from the provisions of the Act all who have been in practice for either three or five years. Some of the States, in drafting a bill of that sort, have first mentioned five years and then reduced it to three. That would do away with Dr. Knowles' objection, I believe. If left as is now proposed, I think as Dr. Knowles does, that it would be inviting all other men that the other States are excluding.

DR. DUTCH: They would have to hurry up, to get in here before the 1st of January. I think, however, that this law would do good in this way: We are frequently asked, "How can I tell a qualified from an unqualified man? I see the sign of 'Dentist' put up; I have no way of protecting myself." I generally tell them, I suppose they have enough friends in the community to advise them properly where to go. But sometimes they get bad advice. The effect of the action of an examining Board would be to give these persons an idea of the real standing of dentists. I presume this law is intended to affect more particularly this class of practitioners, that, with

little or no preparation at all, throw their sign to the breeze, and commence to slaughter every unfortunate victim that comes to their office. I believe its object is more to touch that class of men than it is to protect our pockets. I disclaim that there is any selfish motive about it. I am prompted to vote for such a thing as that solely to protect the community, because I see persons paying their money out, and getting work done without getting one particle of benefit from the operations which they have had done in their mouths. It might be well to employ legal ability to draft a bill in such a way that it cannot be successfully attacked if passed. It is merely to protect the public. There will be enough for the most of us to do here; but I want to see the bill passed, so that the public will be protected against this evil. A man must show some competency before he can pass that test.

DR. ROBINSON: If that is put into the hands of a legislative committee it will be undoubtedly changed materially. About all we can do here is to say that we want something of that kind, and then take the best thing we can get. If our committee went to Sacramento they would try to get what has been expressed here; if they could not get that they would take the next best thing. All that we can do now is to express our general views on the subject, and then let our committee get the best they can.

DR. WARNER: I concur with Dr. Dutch in his remarks on this matter, to a great extent. I believe that if this is made a law here in this State that it can be carried out. I think that three years should be set as the time a man must have practiced in order to have a license without the examination. During the past two or three years a great deal of bad work has been done by men unqualified for their positions, and I don't see how the people are going to discriminate. It would be a work of many years to educate the masses of the people so that they would be able to judge intelligently of the operations of a dentist without sitting down and letting him work for a time on their teeth. I have just had the pleasure of reading a long letter from an eminent dentist in Canada in regard to dental legislation there. The law there is a little more strict than this bill contemplates, but he says it has done an immense amount of good there.

DR. LANE: There has been some conversation to the effect

that this law would be for our benefit and profit. Unless there is some qualification required; unless by this act you prohibit men from practicing, who have no qualifications, I cannot see that it will be of any direct benefit to us. I am selfish enough to want to see some direct benefit to the present respectable men that are practicing dentistry in California at the present time. Whether or not an attempt to make the bill that stringent would cause it to fail altogether, is a question. If we could have a law that would prevent men from practicing in California, who had not been in the practice of dentistry for three or five years, without passing the examination by the Board appointed, there would seem to be something practical and beneficial in that. But if we, by that bill, admit all who are practicing now, to go on and practice as they do, we actually give their practice the stamp of respectability by sanctioning it and legalizing it. That places us, I think, in rather a worse position than we are now. It is like admitting into our State Dental Association a man that does not do right; a man that takes students for a few months, and turns them out dentists, and does many other things in violation of our Code of Ethics. Yet, persons on the outside look upon him as having the same standing with ourselves in the profession. He is committing his frauds as a respectable member of the profession, because he is admitted to our State Society and has complied with the qualifications there required.

The same would apply, I think, to men practicing dentistry, if there was no standard by which they were to be governed under this law. If we can succeed in getting such a law, it would certainly be better and more effectual to have some standard. Let the present practitioners who are not graduates of dental colleges, and who have not practiced for five years in this State, pass an examination.

Dr. McLain: The gentleman seems to forget that such a law would be retroactive, unconstitutional, and would be defeated every time it is attempted. I have been on committees for dental legislation for five years; and I have drawn up bills myself, and they were defeated every time they came up before the Legislature, on the ground that it would be an *ex post facto* law.

Dr. Lane: Then let us have a standard that all be examined.

Dr. McLain: In regard to this idea of educating the masses of the people to know who are good dentists, and who are not, I believe that if you accomplish it in a century, you will have done considerable. The idea should be to shut out at the start all who come in. Are you going to let a thief come into your house and instruct your family how to get rid of him. If there are thieves there, it may be you cannot help it; but don't open your doors to let them in.

Dr. C. C. Knowles: The community suffer infinitely more from men who have been in practice from ten to twenty years, than from those who are now entering the profession; for this reason, that the state of dental operations and the dental atmosphere is such that an office boy who is in an office for three years together, will not make as many mistakes, but will make a better dentist than a graduate in the country who has practiced fifteen or twenty years. So the limit of years will be ineffectual. The limitation must be by acquirement. Any boy of intelligence who goes into a dentist's office and sees the character of his operations, must be better qualified to operate to-day than many men who are practicing dentistry in the country, who have had twenty years of practice, and who do their work as they did twenty years ago. If the Legislature comes down to any such small matter as considering the dental demands of this country for the next eight or ten years, we shall be very glad to hear it. I expect the next session of the Legislature will be taken up with questions arising out of the adoption of the New Constitution.

RESOLUTION AND DISCUSSION RELATIVE TO THE ESTABLISHMENT OF A DENTAL COLLEGE.

Dr. Younger: Mr. President. If in order, I would like to make an announcement that I think will be hailed with pleasure, not only by the members of this Association, but by the profession at large on our Pacific Coast. It is the realization of a wish that from the incipiency of our Society we have been struggling to attain. I refer to the establishment of a college of dentistry in our midst. This has at last been accomplished through the princely munificence of a retired member of our profession, Dr. H. S. Cogswell. He has gifted to the Regents of the University of California, in trust for this purpose, a magnificent property valued at $60,000, with a capital rental of $5,000 a year to minister to its support. It is the desire of professor Le Conte, President of the University, that this Body should aid him with its counsel to organize a dental college that will be second to none in the broad domain of our country. For this purpose I beg leave to submit the following resolution:

Resolved, That a committee of ten be appointed by the chair, with full power to proceed with the organization of a Dental College in such manner as they may deem advisable.

Dr. Dutch: Is this official from the Board of Regents?

Dr. Younger: The request comes from President Le Conte. This property has just been transferred, and the Board of Regents have not been able to meet since that time, and will not be able to meet before the adjournment of this Association; therefore it would be well to take it for granted that it

is official. Appoint a committee, and then wait until the Board of Regents address us officially.

DR. BIRGE: Has the donation been accepted?

DR. YOUNGER: It has been accepted and transferred.

DR. S. E. KNOWLES: What the resolution contemplates, is simply this: to appoint a Committee to succeed the Dental College Committee, just discharged. This Committee is not interested in its labors in any manner. It has power to take any proposition into consideration from any quarter, and to use its judgment in the establishment of a college upon the proper basis. There is no objection to appointing a Committee like the one that has already been in existence two years. I am certain they have not done too much, or overstepped their powers in any way. This resolution simply contemplates the clothing of another Commitee with the same powers.

DR. MCLAIN: I don't see any way out of the dilemma, unless we do appoint a Committee to act; inasmuch as this Society can do nothing in the premises.

DR. C. C. KNOWLES: I think it is simply sufficient to clothe the members of the Committee with the exact powers with which the Committee appointed two years ago was clothed. They had all power in the matter. The Association have no official notice, for the transaction was only consummated yesterday—not in time to bring it before the Committee then in existence. I understand the matter was then determined. And then, as has been said, it was only done by proxy. I saw Professor LeConte, and I heard his statement in regard to it, which Dr. Younger has here repeated — that it was a foregone conclusion. He made some suggestions to the gentlemen present, that would be proper to bring before this body, if they are to take him as authority. He spoke of some matters that he would like information upon; or, that the University would like information upon, and said we might speak of it as an accomplished fact. He makes himself reponsible for that. So although there is an abscence of any official document, from the fact that they have not had the time to prepare it, we have the word of honor of Prof. LeConte, the President of the University, who takes the full responsibility in the matter to

say to us that it is an accomplished fact; that the endowment has been had for the use of the dental profession, and that it would be made use of in that direction.

And it is strongly intimated — and I think will be accomplished—that all that has been already done by the University will be undone, and the thing commenced *de novo*, and organized harmoniously, and in accordance with the opinion of the dentists of the State. And here, where we have the best representation we can get together of the dental sentiment of the State, is the proper place to initiate all matters that may concern us. There is a disposition of perfect fairness all around, I think. All that is necessary is for us to harmoniously fall into the conditions which are being put forth in our behalf; and I believe, in all earnestness and truthfulness, that everything will tend ultimately to the good of our profession.

I have had considerable conversation with the different members of the Board of Regents, within the past few months; and I know, as well as I know anything, that there is a disposition to concede everything that we can in justice demand. I would have been more in favor of throwing this whole matter, and all of the responsibility of everything of the kind, right into the hands of the Board of Regents.

In reference to this donation being hampered, I don't understand that there has been any hampering of it. It has been, I suppose, more or less approved, before its acceptance by the Board of Regents. They do not want a Club House, nor a Woman's Rights Convention connected with it. There are no limitations of that character entertained. Dr. Cogswell has been out of the profession since 1864, and knows nothing about the wants or advancement of the profession. He has made provision that women shall receive instruction the same as men. The University has that established as a principle, in all of their domain. Then he has another limitation that there shall be kept open an infirmary, for the purpose of treating teeth and performing dental operations for the poor, as is done in all schools. There is another limitation that he attaches to it, which recognizes his name in this connection, which he has sufficient personal vanity to wish, which is perhaps justice, and can do harm.

The gift is not encumbered with any such conditions as to make it objectionable to the Board of Regents; and being a gift with sufficient income to support the college in all its details; an income at present of $6,000 or more; a provision for

placing another story on it, which can be given entirely to our purposes, divided as is necessary, for a lecture room, laboratory, and everything else, in the upper story; if the building is not now fit for our purpose, it can be made fit before the college goes into operation. A provision has been made for it; and its location is not so bad; and, as it is a gift costing us nothing, I do not think we should find fault with that.

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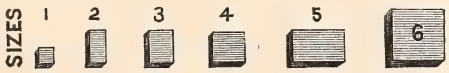

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AT THE

ELEVENTH AND TWELFTH

ANNUAL SESSIONS,

HELD AT SAN FRANCISCO,

IN

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Younger, W. J., M.D.	San Francisco.

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Prof. S. P. Cutlar	Memphis, Tenn.
Prof. Homer Judd.	St. Louis.
Prof. J. H. McQuillen	Philadelphia, Pa.
Prof. J. Foster Flagg	Philadelphia, Pa.
Prof. J. Taft.	Cincinnati, Ohio.
Prof. W. H. Atkinson	New York.
George A. Mills.	Hartford, Conn.
B. S. Codman, D.D.S.	Boston, Mass.
O. D. Munson, M.D.	San Francisco.
E. S. Belden, M.D.	San Francisco.
J. H. Wythe, A.M., M.D	San Francisco.

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TRANSACTIONS

OF THE

California State Dental Association,

ELEVENTH ANNUAL SESSION.

SAN FRANCISCO, June 8th, 1880.

The Association convened in the Palace hotel at 10 o'clock A. M., and was called to order by President A. F. McLain.

Dr. Dennis moved that a committee of three be appointed to draft and report resolutions of respect to the late Samuel S. White. The motion was carried, and the President appointed the following members as such committee: Drs. S. W. Dennis, C. L. Goddard, William B. Kingsbury.

Dr. Dutch moved the appointment of a committee of three, who should designate hours for holding the daily sessions. The chair appointed Drs. Dutch, S. E. Knowles, and Birge, with instructions to report at the afternoon session.

On motion of the secretary, the reading of the President's Annual Address was made special order of business for 2:15 P. M.

Adjourned to two o'clock.

FIRST DAY.—AFTERNOON SESSION.

The Association was called to order at two P. M., President McLain in the chair.

The minutes of the morning session were read and approved.

Dr. Dutch, chairman of special committee, made the following report:

"Your committee would recommend that the daily sessions be held as follows: Morning session from 10 to 12; afternoon session from 2 to 5; evening session from 8 to 10.

Adopted.

The hour for special order having arrived, Dr. McLain read the following address:

The President's Annual Address,

BY A. F. McLAIN, M.D., D.D.S.

Gentlemen of the California State Dental Association:

In accordance with the usual custom, as well as the duty which devolves upon the presiding officer of this Association to present a suitable address on its annual convocation, I have therefore availed myself of the opportunity it affords of extending to you at the same time the most cordial greeting of welcome.

It is, indeed, a matter of sincere congratulation, that we are again permitted to assemble, in our corporate capacity, to promote the ends and cultivate the growth and improvement of a necessary and benign calling; to take another step in that progress which marks the age and distinguishes the other pursuits and professions of life. We meet, gentlemen, to renew friendship, and to cultivate that *esprit de corps* which should animate the members of the same profession. Moreover, while felicitating ourselves, it should not be forgotten that a heartfelt gratitude is due to that beneficent Being for having preserved us from those perils and casualties which constantly beset the lives of men, so that none of the links which compose the circle of this society have, as far as we know, been severed by the cold hand of Death. But, whilst our immediate fold has been fortunate enough to escape the Fell Destroyer, the whole profession has been called upon recently to deplore the demise of one whose field of operations, though moving on the outer sphere of dental surgery, yet, in its allied capacity, exercised an all-powerful influence in the promotion of its interests and in the advancement of art. I refer to Dr. Samuel Stockton White. To his genuis, to his zeal, to his indomitable energy, are we indebted for the introduction of

many valuable dental appurtenances and appliances now deemed so indispensable to every well-regulated dental office. Above all do we owe him a lasting debt of gratitude for the very great improvement which he inaugurated in the manufacture and adaptation of artificial mineral teeth. *Requiescat in pace!*

The occasion which brings us together to-day, as a conventional body of representative men of a learned and liberal profession, is one of no mean importance; for it is only by associated efforts and the commingling of those engaged in the same vocation, where an opportunity is afforded for an interchange of ideas, that a spirit of inquiry is created, which ultimately leads to the highest possible attainments. As in the case of the lap, when friction brings out the beauty and brilliancy of the gem, so is it when mind comes in contact with mind—a spark is kindled which gives momentum to thoughts and investigations, which establishes truths, and thus increases knowledge; for truth is ever the handmaid of science, through whose refractive powers rays of light are sent forth, which dispel the dark spots of our understanding, while at the same time stimulating researches and demonstrations in their legitimate application to the wants and necessities of man. Thus guided by the lamp of truth, his pathway conducts gradually to a higher plane of excellence, that would fain reach still farther to the greatest attainable possibilities.

As a general proposition, professional excellence implies a preparation as thorough and complete as practicable for the performance of the duties and offices that necessarily devolve upon the practitioner of our calling. As a profession, dental surgery is not, or should not be any longer, an open domain wherein men of incompatible and varied pursuits of life can vault full fledged as competent professors and practitioners.

Glancing retrospectively at the dark ages of dentistry, a most somber and melancholy picture is revealed, wherein this beneficent art is seen to have been relegated to the mere mechanic—nay, to the barber, the blacksmith, and not unfrequently to the mountebank—a somberness that was, however, only here and there partially relieved by an exceptional and honorable light; and, viewing it in this light, I say, we are mutually struck with the great advancement our profession has made. So rapid, indeed, has been its progress, that the dentistry even of a half-century ago bears no comparison to that of the present day.

The embryotic age of modern dentistry may be said to have

begun with that time which produced Delabarre, Bichat, Hunter, Bell, Fox, Greenwood, Hudson, Hayden, and others. Previous to this, beyond a few suggestions and aphorisms of Hippocrates, a few allusions of the Latin poets, a few observations of Galen, and a somewhat more extended dissertation of that eminent French surgeon, Ambrose Paré, nothing was known of the anatomy, physiology, or therapeutical needs of the teeth. These men of genius, with no accepted theories, recognized system, nor principles, by their own individual efforts, brought order out of confusion, dispelled the surrounding darkness which invested the new being, and thus prepared the way for the ministration of other teachers, whose labors were soon destined to lead it into higher paths of light and knowledge. Thus, under the guidance of such illustrious men as Nasmyth, Owen, Goodsir, Richardson, Tomes, Beale, Huxley, Harris, Wedl, Arthur, Parmley, Handy, Bond, and others whose names might be mentioned, "dental surgery" began to grow into the shape and guise of a profession, to create a special literature, and commence the basing of its theory and practice on a solid wall of science.

From this germ, societies, both local and national, have sprung, journals been established, and schools founded, all bespeaking material progress; but, however fortunate may be our circumstances and surroundings in this respect, the foundation, upon which an enduring monument of character and reputation may be erected, has merely been laid. We have but learned the alphabet of that language through the diligent study and cultivation of which we can alone unfold the beauties and unlock the treasures of that excellence so much desired for this branch of the healing art.

Dental surgery has not yet reached adult age; and its future status is an unsolved problem as to the definite place it shall assume among the various callings of men. Whether, in the estimation of the world, it shall be classed as a liberal and learned profession, or shall degenerate into a mere handicraft, rests in a great measure with the dentists of the present day. A subject of such vast importance is deserving of the highest consideration from every practitioner who has his profession at heart, and whose incentives or motives are above sordid gain, as represented by the almighty dollar. Whether an independent position or a specialty of medicine shall be assigned it; whether the operative and mechanical departments shall be but integral parts of a complete

whole, or each in future be relegated to distinct and separate spheres—are questions which have distinguished advocates, both pro and con.

The art and science of dentistry has reached that turning-point when all those who are interested in the welfare of the profession should bestow some earnest thought toward giving a proper form and comeliness to a vocation which will exert a powerful influence upon the future of those who, at no distant epoch of time, shall stand in the relation of dentist and patient. Just here, in the life of the tender, budding plant, a proper training or a twist may result in the development of a majestic, lovely tree, or in the production of a monstrosity. Much care, therefore, should be observed in directing its course, so as not to allow ourselves to be dominated by either passion or prejudice.

There are many eminent professionals who maintain that dentists are, in a true sense, medical men devoted to a specialty—that, in short, dentistry being an offspring of medicine, they should receive recognition at the hands of regular physicians. On the other hand, there are those who argue, that, although dental surgery had a low beginning (no lower, however, than that of medicine), yet having succeeded in a remarkably short space of time, by its own inherent powers, with no external aid, in raising itself to a position which commands a passable measure of public respect, it should continue to stand on its own merits; that although owing its maternity to medicine, still, having grown into a robust, healthy youth, without the assistance of a wet-nurse or guardian, and at the same time acquired, not only a creditable literature, but had actually founded a science, it were madness, then, for this self-tutored child to cast aside the character it had already made for itself; in other words, sink its identity for the purpose of basking in a prospective sunshine of respectability enjoyed by an unacknowledging progenitor. Whilst admitting the near consanguineous relationship existing between the two callings, they hold, moreover, that a divergence in pursuits having arisen, with a distinct mission and a separate literature, it has rendered such professional training as obtained from medical colleges *per se* very inefficient, if not wholly ineffectual, for the special requirements of dental surgery.

It is also urged by those who advocate an independent footing for dentistry, that, in attempting to gain recognition through something more than mere consanguinity with medicine, we are

endeavoring to shine with a borrowed light, or otherwise are trying to climb by other means than through the one door where the outsider can ever legally find his way into the ranks of medicine. That, with separate schools, a distinct literature, and peculiar degrees which medical colleges are not competent to grant, in attempting to shelter ourselves under the *ægis* of another organization, we thus confess our inability to stand alone, and are therefore compelled to find support from our neighbor's structure. For they hold, as a logical sequence, that, inasmuch as medicine is a science in itself, he who studies only a subdivision of it cannot be said to be versed to a sufficient extent in medical science. The greater includes the less, but a part cannot comprise the whole. He may thoroughly master some portion of it; but doing this, he is only partially a medical man. The oculist, for instance, practices a specialty; but he becomes a medical specialist only after he has been regularly qualified by a certain prescribed course of training in medicine. The advocates of an independent profession go still further, and assert, that the impertinent claim we are disposed to make because of this admitted relationship has kindled a spirit of resentment toward us, which the medical profession, they deem, is perfectly justifiable in exhibiting. For, without that thorough and radical professional culture which they themselves had undergone, in order to be admitted within the sacred precincts which for ages have been guarded with jealous care, it is but natural for them to demur against the entrance of those whose previous preparation, at best, has in most cases been limited in its scope, if they ever received any preliminary education at all.

The fact is, gentlemen, we take precisely the rank as scientific professional men that we worthily attain; but so long as we permit the ignorant empiric to enter the field of dentistry, recruiting our ranks, as it were, from the workshops, barber-shops, or even from our own laboratories, with people who have had no preparation—have pursued no methodical studies as we are every day doing—just so long will the profession of medicine, which has grown hoary with age, refuse to dental surgery, as thus constituted that fellowship of equality which we are so anxious to obtain. It avails us nothing to cite the many brilliant examples we have amongst us of men of learning and attainments—men of genius, I might say, who would grace any profession or calling, but who, from a lack of discrimination on the part of the public,

are forced to compete side by side, at a humiliating disadvantage with ignorance and quackery.

There is a higher ground, a more noble position, which we deserve, and is our due as a learned profession, but which can never be attained until we shall have erected certain barriers of qualification against intrusion into our ranks, by posting sentinels at its very outposts, so that none shall enter but those who shall have acquired the educational password, in conformity with such legal requirements as other professions have found necessary to establish as a self-protective measure.

If we are to gain the recognition and higher courtesies we wish to receive from the kindred profession of medicine, the in flux of empirics must be stopped, and at the same time a greater harmony of action be inaugurated among ourselves than has been hitherto obtained. The remedy for this evil, I will repeat, lies, gentlemen, in legal enactments. Not till the law steps forth to close the open door to dental surgery will the pernicious influence exerted by the presence of so many dishonest, ignorant charlatans who now flourish cease to degrade our noble art and science to the lowest level of a handicraft.

Law, medicine, and theology have been almost coeval with man's existence, founded, as they were, by the necessities of his nature. Law dates from the time when, for mutual protection, men first banded themselves together, and sought the services of some Moses or Solon to lay down maxims by which their correlations might be governed. Medicine found existence in remote ages as soon as the principles of mortality were discovered to be stamped upon man's physical being, which necessitated the discovery and application of therapeutical agents wherewith to relieve those ills to which he was heir, and which called forth the talents of those who were best fitted for such ministrations. And on the other hand, theology is the outgrowth of that natural principle in man which continually looks to something beyond the infirmities and instability of his physical nature to that natural religion of the soul which yearns for immortality of infinite existence.

Law may become a corrupt engine of oppression, medicine may degenerate into charlatanism, and theology be degraded into priestcraft and superstition; yet, in spite of all, men have ever in their aggregation relied upon law to define social relations, medicine to heal bodily infirmities ; whilst the priesthood, they have

always looked upon as a medium or connecting link between them and that mysterious power to which, from time immemorial, they have in some form poured forth their adoration.

Law, medicine, and divinity having found, as we have said, an existence in the earliest condition of mankind, it mattered not how rude or savage the people were, it was demanded of the candidate for those special vocations a demonstrated fitness therefor. Even our aboriginal tribes, with whom the offices of physician, judge, and priest are united, require for their fulfillment a previous preparation on the part of an aspirant to such honor, that was begun way back in infancy.

Modern medicine demands the evidence of proper scholastic and professional training, manifested through a well-earned diploma, before the neophite is admitted into full fellowship with the profession; law requires of a candidate, under the responsible authority of a properly constituted court, a rigid examination as to his qualifications; and even when admitted, should his unfitness subsequently appear, recognized methods are employed for his expulsion. In the induction into office of the gospel minister, certain formalities must be observed; a close scrutiny is made, not only of his literary and professional, but also of his moral, qualifications. Even his belief is regulated to an established formula, so that his very conscience is placed under surveillance.

But, when we come to ourselves, claiming to be a profession, we have no established line of demarkation within which a man may be orthodox, and beyond which he must be professionally damned. No matter what a man's education has been, what his moral standing in a community, or how vulgar and illiterate he may be, he has only to dub himself a "dentist," and, behold! the public, both high and low, are ready to take him into fellowship, and extend to him the professional designation of "*doctor*." There is no absolute criterion by which those who claim a place in the rank of dental surgery are to be judged. Viewed rationally, if we are a profession, and desire a dignified recognition as such, then a legally accepted *diploma* should determine our professional status; and on the other hand, if dentistry is to be considered a specialty in medicine, a practitioner of this art must be the possessor of credentials bearing the title of "Doctor of Medicine." There can be no other alternative. Again: if we are really to become a liberal profession, some uniformity in qualifications for membership should be established, and well-defined boundaries in

dentistry drawn, and thus all communications with outside empirical Arabs severed. If we are to take the place we claim, as being ours by right, we ought first to ascend to the same elevated plane occupied by the other professions. And, having taken grounds equally firm as to qualifications for membership, we should furnish some assurance that this high position shall be unswervingly maintained; then, I say, we might, with some show of reason, aspire to an equal recognition from the medical fraternity.

In advocating the passage of laws whose object is to restrain in the future the clearly unqualified from entering into the dental field, I do not for a moment pretend, that, by mere legislative action, these unprincipled men could ever be entitled to the respect usually accorded men of scientific attainments. But I do believe, that, having subdued a certain portion of the field of science, and adopted it as our heritage; having thoroughly explored and cultivated it—some legal recognition is necessary, that our title thereto may be confirmed. It should be remembered, too, the world is governed by, and pays apparent respect to, law; and when that great profession places its seal of approval upon our claims, we have advanced a long way toward the attainment of our ambition. A proper recognition from the law assures a positive status; and, being under its *ægis*, we have a criterion by which the standing of practitioners may be definitely determined. Thus, when the public comes to understand, or rather appreciate, the important step we have taken toward the realization of our laudable aims, by separating the chaff from the wheat, and establishing a practice on a respectable basis, respect and confidence will at once have been gained. Besides, the very fact of regulating our practice will not only have conduced to our professional benefit, but also to the adoption of the only true course calculated to deliver the people from the effects of ignorance and charlatanism. As much as the professional status of dental surgery will be uplifted from being founded in law, a still greater elevation in the plane of excellency will result, if joined to thorough education—a natural adaptation for the profession be demanded of those who propose to adopt it as theirs. For, without the possession of certain natural endowments, no amount of training or degree of application, and no known system of education, can compensate for the lack of certain essential qualities or characteristics. It is an accepted axiom, that comparatively few men possess all the natural endowments necessary for excellence in any of the departments of surgery, as

relatively few naturally manifest the attributes which constitute the painter or the poet. These may be cultivated and developed, but never created or acquired; and yet their possession is indispensable to success, not to say excellence in all surgical manipulations. Education, therefore, combined with this peculiar fitness, is the great developmental process by which our beloved science, now in its infancy, shall attain those grand possibilities of which it is susceptible.

It remains for us to embrace all the various means for such development, with which we are furnished through private practice, in standard text-books, now so abundant, lecture halls, laboratories, infirmaries, dental periodicals, and especially the resources of knowledge which are to be obtained from our various deliberative associations, both local and national. Nowhere can a better advanced school be found than right here in an organization like the one I have the honor of addressing. Here, the graduate, as well as he whose education has not been founded in a collegiate institution, is afforded the widest field for enlarging his understanding, and crystallizing, as it were, the learning which has been obtained from any of the agencies just enumerated.

Notwithstanding there are many bright examples of excellence in dentistry who have achieved distinction and honor without the aid of college instructions, still, in accordance with the requirements of the present day, the real foundation of a dental education can be laid and properly carried out more surely in a regular dental college.

Expressions of dissatisfaction, it is true, have lately been heard concerning the management of our schools and the conduct of our faculties of instruction; but with all the faults or delinquencies which may exist in these institutions, it must be conceded that they are of inestimable value, having done more than all other agencies combined to give dental surgery such status as it now enjoys among the liberal professions, as well as its present consideration and esteem in society.

As all human institutions are but finite creations, it would have been strange, indeed, if our system of professional education had escaped those natural imperfections and frailties which are challenging so much unjust criticism as has been made in some quarters of this country. Had these would-be detractors exerted a fractional part of their energies toward the advancement of the profession that they have in decrying dental collegiate institutions, their

animadversions would certainly possess more weight. But in view of the material progress which dental surgery has made, mainly through the efforts of professors and college faculties, who have given themselves in the most generous and self-sacrificing manner to the cause of dental education, it has incurred a debt of gratitude which has never been paid. It is a noteworthy fact, that these professors have not only been unremitting in their labors, but have contributed their best talents, and even of their pecuniary means, for the promotion of professional advancement; and in almost every instance, too, without material compensation or expectation of reward, excepting such reward as naturally flows from the consciousness of having performed a worthy action.

That errors do exist in our educational system, is an acknowledged fact. The most glaring defects consist, in the first place, in the generally poor, ill-prepared material, in the matter of students, upon which the colleges are required to operate, and of which they are to manufacture dentists; and next, the too short period of pupilage, which has become a universal custom, has naturally prevented these institutions from taking higher grounds in their instructions, and which, therefore, have become merely rudimentary in character. Another defect obtains in the standard of proficiency being placed not only too low in all the colleges, but also varying in different institutions, so that instead of there being uniformity in acquirements, there are, in fact, as many different standards as there are colleges. This latter evil, however, has grown out of the struggle for patronage which an unfortunate competition, incident to an unwise multiplication of these institutions of learning, has rendered expedient. The strictures from these causes, which dental colleges have received, have, therefore, a plausible foundation. But admitting all that has been charged, it is simply an *abuse*, which in no wise touches the principle or impairs the system upon which these institutions are founded; and were they protected by law against incursions into the profession by outsiders, we might rest assured that whatever errors and imperfections now exist would in time be corrected; as then a wholesome professional sentiment might be brought to bear upon them, which they could not disregard, and still find support.

It is a matter of sincere regret, that legislative action was not practicable in this State at the last session of the General Assem-

bly, inasmuch as another year will have elapsed before the proper steps can be taken to stop the influx of incompetent empirics from the East, who are gradually being driven out, and who are swarming to the Pacific coast in consequence of the passage of statutory laws which many of those States have adopted with regard to the practice of dentistry within their borders.

In preparing the bill to accord with the spirit of the resolution adopted by this association at its last session, relating to dental legislation, the committee appointed to carry out that purpose found an act of incorporation of this society necessary, in order to give it, as contemplated by said resolution, the controlling influence in the board of examiners. The committee on legislation had not the power to do this, but supposed the act of incorporation could be executed through the medium of the executive committee. Dwelling under this impression, they continued their labors toward perfecting the bill in time to be acted upon by the legislature, although the session had been pretty well advanced, when they were confronted by an unforeseen and insurmountable obstacle, which was, that the executive committee could not, without the express authority of the association, perfect an act of incorporation. This opinion was obtained by a member of the committee from a good legal source, from which he also learned, that the executive committee could incorporate, however, on their own authority, by changing the name of the society—an alternative which they could not and would not pursue under any circumstances. The whole matter now stands in abeyance; but I do hope, that, in view of the great importance of this matter, the association will not let the present session pass over without having taken the necessary steps to carry out the purpose of incorporating itself.

That the enactment of statutory laws cannot result otherwise than in giving a moral tone to our profession, there can be no question; but if we desire to advance it to as high a standard of perfection as the necessities of the age demand, and to which we aspire, other means and agencies in addition must be brought into requisition.

It is needless for me to tell you, gentlemen, that one of the greatest bars to our advancement to respectability as a profession lies in a too prevalent spirit of uncharitableness, or rather of petty jealousies, among ourselves. This overshadowing vice of illiberality has attained fearful proportions, and is working incalculable

injury to the profession in the public estimation. Not one of us, I venture to say, but has at one time or another been the subject of the kind of unjust criticism alluded to from a brother practitioner, who, if he did not actually traduce us, he at least so disparaged our abilities as to leave an unpleasant doubt upon the mind of his patient; and so universal is this the case, where dentists, both high and low, habitually decry each other, that dental surgery has at length come to be looked upon generally as possessed of little capacity for skill; hence all dentists are tacitly classified, whether educated as such or not, as being in the same category. It becomes our duty, therefore, to cultivate among ourselves a more genuine spirit of fraternity than has heretofore prevailed, by casting out from our bosoms a selfish envy that is too degrading for the members of a noble profession to entertain.

But all-important as the cultivation of a genuine *esprit de corps* is to the well-being of dental surgery, the prime agency for a substantial professional advancement is in education, as we have already had occasion to observe—an education, be it understood, taken in its fullest, broadest sense. Not only that which is acquired from collegiate instruction, but that kind of learning, both practical and philosophical, which is gained from the deliberations of well-conducted dental associations. For it is evident, gentlemen, that these organizations, as managed by intelligent, earnest workers, with the co-operating influence exerted through our periodical press, possess pre-eminently all those elements necessary to constitute them the advanced schools of the profession. I will reiterate, the future rank of our profession can find its level in the learned world only through thorough education, and which level will more surely be reached by special training. With all due deference to the opinion of those who believe that the fullest measure in dental education is better assured by a purely medical training, I am compelled to take issue. Whilst advocating the highest culture possible in the dental surgeon, and appreciating as I do the advantages procured him by being conversant with medicine and the collateral sciences, still, I say, his attainments in these can avail him but little, if deficient in special training.

Standing before you, gentlemen, as a graduate in dentistry, as well as in medicine, I must in candor affirm, that, as great an assistance as my medical education has been to me in my practice, it would never, without the aid of a dental curriculum, have pre-

pared me for the exercise of those special and important duties which devolve upon the practitioner of dental surgery.

While we are on the subject of dental education, it will not be inappropriate to allude to the fact of final arrangements having been perfected by the Regents of the University, for inaugurating, at an early day, the Cogswell Dental College, the establishment of which has been discussed in this Association for several years past. This long delay has been due to a conflict of interests, which has rendered the action of the Regents particularly embarrassing.

The organization of this institution cannot result otherwise than as a substantial benefit to the profession on this coast, by offering home facilities for dental instruction to many persons who come in irregularly, in consequence of the difficulties and the great expense which are necessarily incurred from an attendance at the Eastern colleges. The circumstance of isolation from educational centers, together with the ever-increasing growth of empiricism in this section of our common country, renders a dental college in our midst an actual necessity. Hence, in favoring the establishment here of such an institution, does not militate in the least against the argument I have advanced in reference to the evil effects which result from their multiplied numbers elsewhere; for you must agree with me, that it is far preferable to admit persons into our ranks whose professional education has been founded on a systematic basis, even though it be but partial, than to receive those who have had no culture at all.

In conclusion, gentlemen, permit me to return my sincere thanks for the compliment you have paid me in calling me to so distinguished a position as that of presiding officer of this Association. Such an honor was entirely unexpected, being then a comparative stranger among you, and which is all the more highly appreciated, as it was a spontaneous expression toward me of your confidence and friendship. The largest portion of my life having been given to the advancement of the profession of my choice, and entertaining no ambitious personal aspiration, save that my humble efforts might conduce to its best interests, I was content to work in the ranks, and therefore felt no need of such an incentive in order to elicit my co-operation with you in forwarding this laudable object. It may be well for me to state, further, that in conducting your deliberations, it shall be my en-

deavor to always act with the strictest impartiality, as my feelings toward you individually are of the most fraternal nature, having neither animosities nor prejudices to gratify.

Report of Committee on Dental Pathology.

BY F. A. BREWER, D.D.S.

Economic treatment of two superior central incisors affected with abscess, with pulps calcified.—A few months since, a gentleman, aged thirty-five, temperament sanguino-bilious, called upon the author, in relation to an affection of two superior central incisors, each with an abscess at its apex. These two teeth mentioned were free from caries, and we at once predicted that they possessed a marked history. Upon questioning our patient, we learned that some years previously, the right central incisor had received a blow from a crowbar, in its descent from a perpendicular position to the floor, and, as he occupied a sitting posture upon the latter, the force proved the more marked. The point of contact, as near as our patient can remember, was upon the distol margin of the labial surface, thereby causing concussion of the adjoining central. The gentleman is emphatic in his declaration that the latter tooth was untouched. An examination of the palatine surface of these two teeth, with the mouth glass, showed a dark grayish or dirty opaque color, which indicated death of their pulps. The seeming correctness of our convictions was the better increased by the presence of the two abscesses at their apices; therefore, we advised an immediate entrance to the pulp chambers, to which he assented. At the moment of applying our drill, a sudden ray of sunlight was thrown upon the teeth, the assistance of which we usually borrow in such cases, it having previously been denied us upon this occasion by the presence of a thick fog. The sunlight effected an entire change of color of the teeth in question, by exhibiting a bright translucency of aspect, which upset our former deductions; for here was presented the usual indications of pulp calcification. But how about the abscesses? Here is where, momentarily, we restrained our thunder. We at once laid aside the drill, and determined to push our investigation farther, before concluding to destroy the dental pulp. Reasoning from our knowledge of the claims affirmed by Salter, which are:

"That in case of an accident occurring to a tooth, if pericem-

entitis becomes chronic, and its limitation is confined to one fang, or to a part of a fang, secondary dentine will follow, and the entire nerve throughout will calcify," urged deeper reflection. In our case, there was but one fang to each tooth, and the brightness of color indicated the very opposite of dentalized pulp. However, the query still troubled our mind touching the possibility of an arrest of the pulp transformation, leaving, perhaps, offshoots at the apices. Straining our vision to ascertain whether some undue articulating force was being brought to bear upon these teeth, as is common with teeth affected with abscess, we observed that the cutting edges of both teeth stood forward fully one-eighth of an inch from the normal line of the arch. In addition, also, was there perceived an elongation of both teeth measuring a like distance. We wondered, then, if we had not discovered the true source of those abscesses, especially when the fact was observed that their crown diameter presented an area quite three-eighths of an inch in length, and a like breadth of measurement. Knowing of numerous cases of far lesser surface of crown, in which the power of gomphosis had proved defective in cases of accident, even though retaining a normal position in the line of the arch, how much more must the force at the time of the accident act upon the surface of these teeth, thus abnormally situated.

Acting upon this hypothesis, I came to the conclusion not to employ screws, bands, or other instruments of torture, to torment my already apprehensive patient, but advised a course rather experimental, which was: First, reduce the length of the crown, to the extent of the elongation; second, to give the teeth a period of rest, by placing gutta-percha caps upon the first bicuspid and adjoining molars, on each side of the inferior jaw; third, to refrain from the application of any medicine to the abscesses, and thus test the soundness of our philosophy, and also ascertain the power of nature, if properly directed, to successfully cope with adversity in cases of injury such as are under consideration, either accidental or congenital. These proposals were most readily assented to by the patient, and the same were fully carried out to the letter. Five days after, our patient returned as requested. We found that the discharges had entirely ceased, and the sinuses leading to the abscesses were most markedly contracted. The patient was requested to continue wearing the caps, until the sinuses had apparently closed, and to call in about ten days. He, however,

failed to do so, until about two weeks had elapsed, when there was observed not only the disappearance of the tumors over the fangs, but also there was noticed cicatrices at points that formerly marked the portion of the fistulous openings. Suffice to say, that eventually the case was successful, and some months have now elapsed with no indication of return of the abscesses. We would ask further indulgence of our hearers by the addition of some remarks relating to this subject. We believe there still prevails, with at least a part of our profession, an idea as well as a declaration, to the effect, that, in a majority of cases presenting calcification, in case of accident, abscess was certain to eventuate. We must say, that, through our long line of practical experience, with an abundant opportunity for observation, we have yet failed to meet with a genuine case distinctly traceable to calcification, provided the metamorphosis involved the nerve entire; for not only is the odontoblastic function performed throughout the nerve area, but, in addition, it is observed in such lesions, that the fang surface becomes more or less covered with cemental, or, if you please, calcific deposits, most profuse at the apices, thus entirely obliterating the foramina, provided some constitutional or mechanical interference does not upset its progress. This is more readily influenced in a diathesis presenting a syphilitic or scorbutic type; and in these latter cases, if but an offshoot from the main body of nerve remain at the apices, the vacuum area will suffice to generate dire results. We have frequently seen cases having abscesses indicating this condition, as well also those where, to the unassisted vision, the foramina would appear as wholly obliterated; but when the fang was placed under a magnifying lens, the foramina were still perceptible, as well as the canal of the offshoot. Apropos of this subject, and while referring to the energy of the pericementum, I will remark, that my experience has taught me, that, during my treatment of general tooth abscess, arising from nerve atrophy, and where there appeared indications presenting absorption as well as necrotic symptoms at the apices, the pericemental function has come nobly to the rescue, and also has sealed a foramen which would admit, at the outset, one of our largest nerve extractors. But these were cases where arsenious acid (a most deadly enemy to the successful cure of abscesses) had not been allowed to injure the cemental organization, as well also where no carbolic acid or creosote had been thrust beyond the foramina—a procedure decidedly criminal in my judgment, and calculated to prevent the for-

mation of granulations upon that part of the pericementum. No sane man will allow the passage of these radical medicaments beyond the foramina, except by percolation. I speak in the light of the experience of thirteen years of close companionship with alveolar abscesses. If we would be more successful, and stop crying *impracticability* in the treatment of abscesses, we must exhibit more systematic energy locally, and dip deeper constitutionally. To return to our subject proper, we will finally remark that calcification is but one species of hypertrophy, governed by the same law that presides over exostosis, and acting under the same agency—that of irritation. If we will but bring about measures defining a certain degree of limitation in our cases presented, many teeth, seemingly in doubt by a casual observer, may be preserved, and serve the purpose for which they were originally intended.

On motion of Dr. S. E. Knowles, the secretary was instructed to secure the services of Dr. E. S. Belden, short-hand reporter, for the session.

Report of Committee on Mechanical Dentistry.

BY D. CAVE.

Mr. President, and Gentlemen of the California State Dental Association:

Having had the honor to be appointed a member of the committee on mechanical dentistry, I deem it my duty to lay before your honorable body the experience I have gathered in this branch of dentistry in my small country practice.

I shall commence with the materials for plates.

Vulcanite and 18-carat gold plate gave the best satisfaction in my practice, and I use them as follows:

For full upper or lower dentures, I use vulcanite. For partial dentures, held in place by atmospheric pressure, where either or all of the incisors or canine teeth are lost, I also use vulcanite, as well as in all such partial cases where natural separations do not exist, or where the remaining teeth are soft, or the patient is careless as to cleanliness.

I use gold in partial cases as follows:

1st. For persons of nervous temperament, who have never worn any artificial teeth, and object to large atmospheric plates; for

such, I would make a small gold plate, attached by clasps or rings, provided that the remaining natural teeth are favorably distributed for the support of such plates.

2nd. For such persons who have already worn metallic plates, which have given satisfaction.

3rd. For old persons whose teeth are hard enough that the friction of the clasps could do no harm. And then I observe the following imperative rules, viz.:

Never separate two teeth by file or any other means for the purpose of fastening a clasp.

Never attach a clasp to an incisor or canine tooth.

Make the clasps always broad enough, and rounded at the edges, so as to clasp the tooth at its lower portion, where the tooth is widest and the enamel the thickest, regardless of exposure to sight, and finally cover every plate with a strong coat of fine gold, by the electric process, thereby avoiding any possible galvanic action in the mouth, caused by the solder, giving it at the same time a clean and uniform appearance, and making the clasps, if seen, to look more like a large gold filling than supports to an artificial denture.

In connection with the above, I will give my reasons why I do not recommend the other well-known materials for similar purposes, and shall begin with *Celluloid*, which is well known to you all.

I discontinued its use mainly on account of discoloration as soon as worn, and of being harder for the patient to keep clean than any other material I know of. I shall have to speak more about it before closing this paper.

Platina.—This material is almost as costly and as hard to manufacture as gold, and still has neither its beautiful appearance nor the necessary rigidity for a good partial denture; and as to a full plate, even the finest workmanship and best-made joints in gum teeth for metal work will always admit the lodgment of food, making it therefore objectionable.

Silver.—This metal I find more objectionable than platina, on account of its oxidation, and in some mouths even disintegration; also for its unpleasant taste as soon as fruit or acid is taken in the mouth, and the unsightly appearance as soon as worn, while it is harder to manufacture than platina.

Continuous Gum Work.—This material has the cost of its manufacture, its excessive weight, and trouble to repair in case

of breakage against it, but is surpassed by *none* for its cleanliness and its beautiful appearance, and is admirably adapted for lower dentures.

Porcelain Teeth.—I have tried different manufactures of plain and gum teeth, but none have given me as good satisfaction in regard to strength, form, and color as the S. S. White teeth; and I must recommend the block teeth where perfect cicatrization has taken place, having sufficient room for its application, because when well jointed, nothing short of continuous gum work can surpass it in beauty. Yet the plain tooth must not be lost sight of, because it is the only tooth that can be used successfully where a denture is needed before perfect cicatrization has taken place, as well as in partial cases, where there is but very little depression in the alveolar ridge after the extraction of one or more teeth, even if perfectly healed and well rounded up; or in cases of a prominent portion in either of the maxillary bones; or in case of a very stout or too thick lip. Here the plain tooth places it within our hands to correct deformity, as well as to imitate nature almost to perfection, having the advantage of curve and irregularity, and adding the facility of inserting gold fillings wherever judgment dictates; and if the teeth are well fitted to the natural gums, will make it almost impossible for an expert to determine whether they are natural or made by human hands.

And I would say right here, that we are yet wanting a plastic material like vulcanite, with at least as good a color as celluloid before being worn in the mouth. I sincerely hope that some of our ingenious and scientific brethren will direct their attention to experiments on the subject of such an ideal material, so that we could do away with the difficult process of continuous gum work, block teeth, black joints, and other troubles in the construction of a good artificial substitute, giving the dentist an opportunity to better imitate nature, and yet place it within the reach of everybody.

And at this point, I think well to make a statement in regard to celluloid, which, as you all know, I received with open arms, and recommended, rather hastily, to your attention last year. Fortunately, some of you knew more about it than I did. I did not take it up because it was new to me. I tried it seven or eight years ago, but gave it up as a bad material, simply because it was then of bad color and hard to manufacture, as it was then thought necessary to make metal casts for pressing it. The

plaster casts would break; and on account of the bad color, we had to use gum teeth only, which, from the large amount of pressure, invariably broke. But subsequently, as the vulcanite *versus* celluloid litigation went on, I saw repeated advertisements about the improvements that had recently been made in the material, and read a number of articles and testimonials in its favor, I was induced to try it again. Sure enough, all the dentures I made were very easily manufactured, and were of a beautiful color, almost like the natural gums, and gave general satisfaction. That was about the time your honorable body met last year. But soon afterwards, some of the persons that wore these teeth commenced coming back, giving me a chance to see how the sets looked three, six, and nine months after insertion; and lo! what a change! The beauty of the plates was gone, some of the teeth were lost, and I bitterly disappointed. My ideal material slipped through my fingers, and of course the steam apparatus and blanks have reposed on a dusty shelf ever since.

Materials for taking Impressions.—For full upper dentures I use White's dental plaster alone; for full lower impressions, I use, in some cases where the impression tray is easily adapted, plaster alone; but in most cases I take first a wax impression, using bees-wax raised in this county, previously prepared into sheets, and softened with dry heat over an alcohol lamp. The impression is then cooled in water, and some of the wax cut out, and proper retaining cuts made, and after having been tried again in the mouth, I pour in the plaster and take the final impression.

I use the same process in all partial cases, which I find very convenient, because the impression is easily removed from the mouth, and in case of the breaking of the plaster, the broken pieces can be replaced and repaired with more facility.

For taking the bite, or articulation, I use the wax as mentioned above. I also use it for base plates, because I never try any vulcanite dentures before completed, and see, therefore, no use for a costly material like gutta-percha.

Finally, I shall mention my way of inserting gold fillings in porcelain teeth.

I use in my dental engine a thin, separating, corundum disk, which I hold at one margin of the proposed cavity, at an angle of forty-five degrees, keeping it steady, and cut into the tooth from one sixty-fourth to one thirty-second of an inch; then I apply the

disk to the opposite intended edge, using the reversed angle, cutting to the same depth, and then unite the two cuts by keeping the disk perfectly straight and following up the intended curve so as to make the cavity larger or smaller as may be desired. Then I fill with cohesive gold, in the ordinary manner. To make the above better understood, I send you some specimen teeth.

The obituary committee made the following report:

WHEREAS, the supreme, impartial and inflexible law of God having removed from among us all that was mortal of Samuel Stockton White, while in the zenith of his usefulness as a citizen, his success as a merchant, and the enjoyment thereof: therefore be it

Resolved, That Dr. S. S. White possessed to an eminent degree those rare qualities which contribute so largly to the promotion of education, industry, and therefore the well-being of mankind.

Resolved, That the renown of American dentistry is chiefly indebted to his intelligence, industry, energy, and zeal for the high order of his department of our art for which his name stands pre-eminent all over the civilized world.

Resolved, That the dental profession through his death has met with a great loss; and be it further

Resolved, That a copy of these rosolutions, which are but a slight expression of our regard for his life and character, be transmitted to his bereaved widow and afflicted children, whose loss we deeply deplore.

(Signed) S. W. DENNIS,
WM. B. KINGSBURY,
C. L. GODDARD,
Committee.

FIRST DAY.—EVENING SESSION.

The Association met at 8 P. M., with President McLain in the chair.

The minutes of the afternoon meeting were read and approved.

An essay was read, entitled

THE RELATION BETWEEN DENTAL SURGERY AND MEDICINE.

BY W. A. KNOWLES, M.D., D.D.S.

Mr. President and Gentlemen:

An extract from Article III. of the Code of Ethics adopted by this Association reads as follows:

"Dental surgery is a specialty in medical science. Physicians and dentists should both bear this in mind. The dentist is professionally limited to diseases of the dental organs and the mouth. With them he should be more familiar than the general practitioner is expected to be; and while he recognizes the superiority of the physician in regard to the diseases of the general system, the latter is under equal obligations to respect his higher attainments in his specialty."

Much has been said upon both sides of the question as to whether or not we are medical specialists.

In my opinion, the answer hinges on whether we consider dentistry as mechanical or otherwise. If dentistry is merely mechanical, then it is not entitled to recognition as a profession. If it is to be considered as a profession, it must have for its aim the same treatment of the teeth as the human system receives at the hands of the physician. A physician practices his art for the purpose of alleviating pain, and curing diseased conditions of the body. A dentist has the same object in view, but with reference to a circumscribed portion of the body. Thus far there is no dissimilarity in the ends sought. Let us consider some of the conditions of the organs coming under the dentist's care and see whether the operations for relief are mechanical or not.

Under the head of therapeutics we may place treatment of odontalgia from exposed dentine, or exposed cornu of the pulp and periostitis; under the head of surgery would come ranula, and the extraction of teeth and roots.

Under the head of surgery and therapeutics would come odontalgia, from the formation of abscess, salivary calculus, with the generally accompanying condition of the gums and dental fistulæ.

It might appear to some that the treatment of dental caries is purely mechanical. There is a cavity in the tooth, and it must be sealed up. The operation *is* purely mechanical, but it is necessary that the brain should exercise reason and judgment in the selection of remedies. From the nature of the disease, the operation for its cure must be mechanical. All cavities are not alike, however, and the treatment must vary in each particular case. We must know when and where to use each different material. If the teeth had no vitality, then operations on them would be merely mechanical, but they are living, and a part of the human economy, and an important part at that.

Of what value would dentistry be if metallic fillings were inserted in all cases? How many teeth of some particular classes would we save? All have met with cases where there is a secretion of a strong acid from the mucus follicles about the necks of the teeth, and where proximal, labial, and buccal decay has done considerable damage in the mouths of very young patients. Is the treatment merely the mechanical operation of filling the tooth? How long will the tooth remain sound, if other treatment is not adopted? Surely, in this case it is not merely mechanical treatment that is called for.

Again: where we find extensive decay in the mouths of those suffering from indigestion, and where the teeth are constantly bathed in sour eructations, is the mechanical treatment sufficient?

In pregnancy, are we governed by the same course of treatment as in other cases? Would it be right to operate extensively and with the object of accomplishing anything permanent during this condition? Can we expect to do anything permanent in cases of partially erupted but carious teeth?

What can we do with teeth coated with calculi, or those having little or no attachment to the alveolar process, unless the conditions other than caries are first attended to? Is the treatment the same in deciduous as in permanent teeth? Is the treatment of devitalized teeth mechanical? or the correction of irregularities? It is true that mechanical appliances must be worn; but if this causes it to be mechanical, then the treatment of fractures by surgeons is also mechanical.

Judgment is required in regulating teeth: we must know when and where to extract, where to move the teeth, the limit, the anatomy of the parts, and hence this is not mechanical.

And now for the branch which we term "Mechanical Dentistry." This would more properly fall under the head of mechanics; still, in the adaptation of artificial substitutes much must be considered, and the judgment must be frequently called upon. We must study temperaments, must understand superficial anatomy, and the contour of the face. We must understand the parts concerned, so as not to damage them. Certain parts must not be encroached upon. Different cases must be applied in different ways, and though it is called mechanical dentistry, it is not entirely so. If the accoucheur, the aurist, the oculist, those treating the throat and chest, those treating the nervous system, those treating

tumors and cancers, and the dermatologists are to be considered as specialists of medicine, why not the dentist? Each has his own particular portion of the human economy to treat, and in what manner does the treatment by these acknowledged specialists differ from the treatment by the dentist? It has been claimed that nine-tenths of the dentists' work is mechanical; we grant that a portion of it is mechanical, but does the manufacture of artificial limbs, noses, and eyes detract from the dignity of medicine? It is true, the physician does not manufacture these himself, but he may apply them. Because the aurist applies the dentaphone or audiphone to the use of his patient, does he lower his medical status? Does the oculist who uses the optimeter and supplies lenses lower himself by so doing?

Treatment of fractures might be considered mechanical on the part of the physician, and yet it would not be so. If the teeth are a vitalized portion of the human body, and are subject to disease, then operations upon them come under the head of a medical specialty. It is true that the teeth, being a lower grade of organization, are not put upon an equal footing with other portions treated by specialists; still they are living tissue, and a part of the general system. The dentist is not confined to the dental arch. Diseased conditions of the gums, salivary glands, ducts, hard and soft palate, nares, and other portions, come under his care. Sometimes he treats indigestion and hysteria. The oral surgeon performs plastic operations upon the face. Neuralgia is frequently cured by the dentist where there is a mistaken diagnosis on the part of the physician, who forgets that the *dens sapientiæ* have frequently much to do with this condition. Tumors, both malignant and benign, in the oral cavity, are diagnosed and removed better by the oral than the general surgeon. Dislocations and fractures of the maxillæ are often best treated by the dentist.

All these conditions may properly come under the head of Dental Surgery. Hereditary syphilis, and a general want of tone in the system, may often be diagnosed by means of the teeth. How many cases are met with where physicians have removed sixth year molars, under the impression that they were temporary teeth? Alveolar abscess has been treated for erysipelas. Ranula has been diagnosed as a malignant tumor.

The teeth are organic, and should be treated with the same judgment as other portions, and where the disease cannot be located in the teeth, we must examine the contiguous parts. Den-

tistry is not generally regarded by physicians as a medical specialty, and little is said in medical text-books in reference to the teeth, or the portions most concerned in dentistry. In the medical lectures, if the teeth are named, and the number in the deciduous and permanent sets is given, it is generally considered sufficient. Physicians know but little of, and care still less about a knowledge of, our profession, and, excepting extraction, generally turn the cases, where the teeth alone are involved, over to us.

Dentistry is of much more recent origin than medicine, and has not long been recognized as a profession. It has been said, that intelligent jewelers make better dentists than physicians. If dentistry is considered as mechanical, then they do; but if a medical specialty, they do not.

The course of study in medicine and dentistry is similar as regards Anatomy, Physiology, Chemistry, Pathology, Materia Medica, and Therapeutics. This is what makes the general practitioner. The physician also hears lectures upon ophthalmology, otology, microscopy, biology, histology, obstetrics, and diseases of women and children. All of these latter come under the head of medical specialties, yet it is necessary for the general practitioner to be conversant with them. The dentist has no need of studying the other medical specialties, but must have the same fundamental knowledge as the physician. Where, now, does the dentist differ from other specialists? He branches out from the same trunk of medicine that other specialists do. It is true that a dentist would have no need of gynæcology, or other recognized specialties, yet the knowledge would do him no harm. There is this advantage in studying medicine previous to dentistry. One has much more opportunity for seeing and learning at medical colleges, on account of the greater amount of material at hand, and the better facilities for the teaching of the general branches. Instead of getting a smattering of them, he *learns* them by experience and observation. Having, then, mastered the general portions, he is better able to cope with his own particular study, and to appreciate the relation it bears toward general medicine. The physician has nothing to do with metallurgy, vulcanite, plaster of Paris, filling materials, or the thousand and one things about a dental laboratory; but in other particulars, a physician is a better operator than a jeweler. Were dentistry divided into two portions, and have one faction practice operative and the other mechanical dentistry (as it should be), there

would be no difficulty in recognizing the operative dentist as a medical specialist. We would have the same line of division in our case as there is between the physician and the manufacturer of artificial limbs, eyes, and noses, spectacles, audiphones, etc. It is the mechanical part that keeps it from recognition, and until the two parts are separated, or until the public is educated to it (for dentistry is still young), we may clamor for recognition without obtaining it.

SECOND DAY.—MORNING SESSION.

The Association met at 10 A. M., with President McLain in the chair.

The minutes of the last session were read and approved.

Dr. Birge, treasurer, made the following report, which was referred to the executive committee:

California State Dental Association in Account with J. J. Birge, Treasurer.

DR.

1879.	May 16.	To paid Dr. Goe, voucher No. 1	$ 63	25
	17.	" *Call*, advertising, voucher No. 2	1	00
	28.	" *Alta*, advertising, voucher No. 3	1	00
	28.	" Belden, reporter, voucher No. 4	40	00
	31.	" Palace Hotel, gas, voucher No. 5	10	00
	Aug. 4.	" Postage stamps, voucher No. 6	10	00
	4.	" Crocker & Co., directory, voucher No. 7	32	00
	18.	" E. A. Dakin & Co., voucher No. 8	2	50
	Sept. 17.	" Crocker, printer, voucher No. 9	2	50
	22.	" E. S. Belden, voucher No. 10	40	00
1880.	Jan. 6.	" S. E. Goe, stamps, etc., voucher No. 11	10	55
	27.	" Crocker, printing 300 copies, voucher No. 12	358	90
	June 8.	" balance carried down	13	90
			$585	60

CR.

1879.	May 12.	By balance	$335	60
	13.	" cash of Goe, secretary, No. 1	100	00
	13.	" " " " No. 2	70	00
	15.	" " " " No. 3	40	00
	15.	" " " " No. 4	40	00
			$585	60
1880.	June 8.	By balance due by J. J. Birge, treasurer	$13	90

Report of Committee on Dental Therapeutics.

BY C. L. GODDARD, D.D.S.

Mr. President and Gentlemen:

It must not be expected that the report of a committee, as a whole or as individuals, should be wholly original; in fact, I do not know as any part should be expected to be so: for I believe the duty of a committee to be, to look over the ground for the past year, and report what has been done by the profession at large. This I have not been able to do very thoroughly. Much that is new is not published, and therefore not accessible.

Doubtless the most minute descriptions of treatment have been made by Dr. J. Foster Flagg. However much we may disagree with him about the "new departure," we must concede that he at least knows how to treat teeth, both before and after filling. In reviewing his articles, we notice a less use of the harsher remedies that have been our "stand-bys," and an extended list of new remedies of milder form. His treatment of periostitis, though not mild, must certainly be productive of the best result. The main thing is removal of blood from the part affected, that is, local depletion, thus lessening pressure, and hence lessening pain. One method advocated by him, though introduced by Dr. Wingate, is the use of a modified breast pump. An incision is made in the gum, and over it placed a suitable mouth-shaped tube, connected with the pump. By this means, blood may be removed quickly, easily, and without the unpleasant features in the use of leeches.

In the use of iodine, he applies a tincture six or eight times the officinal strength, and applies it in spots, instead of painting over a large surface. Thus a small portion only of the mucous membrane is removed, and healing takes place more rapidly. If lancing alone is relied upon for depletion, he recommends lancing around the teeth, as though for extraction; thus the blood is drawn more immediately from the swollen and angry pericementum.

For obtunding sensitive dentine, we have a new material given us—glacial phosphoric acid.

A temporary filling is generally a therapeutical agent, and for this purpose the oxyphosphate of zinc cements are growing in favor, since they are comparatively painless in application.

Lately a member of our society has recommended capping exposed pulps with a paste made by mixing carbolic acid with the

oxyphosphate of zinc cement. In his hands it has proved a success, and I hope he will relate to us more particularly his method of using it. As it forms a hard covering, or cap, it certainly has an advantage over oxide of zinc and carbolic acid alone.

It is customary, in reports of this kind, to give cases from practice. I have but one which may be of interest.

A boy, ten years of age, received about two years ago a blow on the mouth, which broke off the lower central incisors about half-way between the cutting edge and the gum. When I saw him, a few days after the accident, the pulps of both teeth were dead, having been exposed by the fracture. I cleaned out the pulp canals, treated a few days, then filled them partly with cotton saturated with carbolic acid, and partly with gutta-percha. The teeth gave no trouble, and I lost sight of the case for about two years. I then found an ulcer on the point of the chin, from which a discharge frequently took place, and upon inquiry I found it had continued from about the time of the accident, though he did not connect the two.

A physician to whom the case had been taken tried to heal the ulcer by means of a plaster, but without success. I immediately connected it in my mind with the devitalized teeth. I removed the gutta-percha and cotton from the canals, and made again an application of cotton and carbolic acid, and repeated it in a few days. This continued a few weeks, and so did the discharge. I then wound some cotton on a broach, and using this as a piston, forced a saturated solution of iodine in carbolic acid into the pulp canals. Two weeks from that day, I saw the patient again. He said there was something the matter with the "sore," for it did not "bleed any more." I found the ulcer was healed, and only a crimson-colored dimple showed where it had been. I soon after filled the canals as before, partly with shreds of cotton saturated with carbolic acid, and partly with gutta-percha, intending, when the boy is older, to fill with gold. Now the question is, why did the fistulous opening appear at the point of the chin, instead of within the mouth, as usual?

The weakest tissue always gives way first; and doubtless the fistula opened through the alveolar process below the reflection of the mucous membrane from the gum to the lip, and the weakest point being below, instead of above, gravitation also assisting, pus worked its way between the sheaths of the two parts of the *levator labii inferioris.*

No external fistulous opening on the face could have been in a more fortunate place than this, for the scar gives the boy's chin a pretty dimple, and may be covered by the beard when the boy becomes a man.

Dr. Max Sichel. I have made use of pyro-phosphoric and carbolic acids.

A lady came to my office suffering from a tooth, in which the pulp was bare. I cleaned it out thoroughly, washing it with carbolic acid and iodine; and after that, I made an application of carbolic acid, pyro-phosphoric acid, and nitrate of zinc. The mixture of these ingredients makes a plastic cement, or paste, and with it both the pulp is capped and the cavity filled. I have often been very successful in the use of it.

Another filling may be put over it, as I believe the saliva will act on the carbolic acid, causing its disintegration. I suggest this as a capping and foundation filling.

Dr. F. A. Brewer. The question is, When shall we make our application in filling the pulp canal? Corpuscles in diseased periosteal structure die, and these dead corpuscles must be taken out. In the application of the oxychloride of zinc to the bone substance, it has been the means of absorbing an amount of plasma passing through the pulp tissue, and so much so that I have in some cases, in taking out oxychloride of zinc fillings, found that half or two-thirds of the amount of filling had been absorbed or disintegrated.

In alveolar abscess, I treat the periosteal structure until the formation of the pus ceases; for, while it continues to form, it must have vent. On your first examination and application, you will find pus; at the next application, mere serum—dark, gray, and dirty. You must get rid of that; then make your next application, and your cotton will show a better condition of the plasmatic exudation; and a day or two after that the cotton will come out dry and clean. If the cotton is perfectly white and clean, you may know that your tooth is ready for filling.

In regard to the congestion of the perisoteal structure, I have some instruments here which have never been recognized publicly, but with the structure and character of which I am perfectly satisfied.

My smallest point is the one which I use for the purpose of relieving congestion of the periosteum before suppuration commences.

On account of the flexibility of the shaft, and the small size of the head of the drill, you can pass it up into and through the membrane, without any of the vibration or concussion which often at the beginning produces a congestion of the periosteal structure, and which vibration always gives pain. This will perforate the apicial foramen, and you will find that relief will follow immediately upon the escape of blood.

Dr. Max Sichel. A year ago I received a paper from Europe, which contained a description of a new filling, over which the chemists and dentists in Germany are enthusiastic. It is known as the pyro-phosphate of zinc filling, and is now in general use. Some call it enamel. It is known under different names, but its symbol is that of pyro-phosphoric acid.

The glacial-phosphoric acid is melted, and the water which it contains is driven off by its being subjected to a heat of about two hundred and ninety degrees, when it is called pyro-phosphoric acid.

When it reaches this degree of heat, oxide of zinc is added to it, thus making a pasty material; and nitric acid, with distilled water, is used to make the nitrate of zinc.

After the nitrate of zinc is dissolved, it comes to the consistency of butter, and is then dried, and can be mixed with the other fluid, or what we call the pyro-phosphate of zinc; and this dark fluid and the pasty substance, mixed together, form the new filling. That is all that it contains. I can show all of you how to make it.

It was Dr. Ardens who first induced me to use this nitrate of zinc, instead of the zinc that we have to burn for so many hours. I tried it, mixed with my pyro-phosphoric acid, and it worked excellently. Then I went to work and made it with the nitrate of zinc.

Dr. F. A. Brewer. In regard to the treatment of the mouth in cases of acidity of the saliva, and sensitive cavities, I am in the habit of directing my patients to rub prepared chalk upon the sensitive teeth each night before retiring, for two or three days before I operate upon them. Suppurating gums are always found when the saliva is acid. I have found this application of chalk very efficient.

In such cases, I also use bloodroot and chloride of zinc, making a stiff paste, applying it, and letting it remain in the cavity for about seven minutes, after which I can excavate without pain.

If there is need of deep excavation, then a second application must be made. Of course, the cavity must be kept dry during this application.

In the treatment of deep-seated caries, we very often find ourselves mistaken in regard to the extent and progress of the disease towards the pulp cavity.

It is customary to cut away all of this dark, black-colored substance. There is a line of demarkation, and that is what we should follow. When we have taken off the soft organization, then we come to this hard tissue, which is secondary dentine that the pulp has thrown out as a bar to the disease. Do not cut that. Cut until you find the chips from the excavation are white; but when you come to a hard surface, let it remain.

We find the vitality of the enamel is not sufficient for its reproduction by the physiological action of the pulp. In the dentine, the vitality is different. Leave that, no matter how thin it may be, insert your filling, waterproof, and then you will have no trouble.

In cases where there is a spongy condition of the tissue over the pulp, the acid is absorbed. To counteract or neutralize that, I put prepared chalk into the cavity. I leave the chalk in there for four days, when I remove and renew it, shutting up the cavity with a pledget of cotton saturated with a preparation of gutta-percha and chloroform. I renew this treatment for several sittings, until I have neutralized the acid. It is better to go down to the pulp completely, than to leave any of this spongy substance over it.

Dr. Bishop. Last year, the use of tar-water, preparatory to filling certain teeth, to destroy their sensitiveness, was spoken of in this Association, and I would like to know if anybody has experimented with it with success.

Dr. Max Sichel. I have found that it answers a good purpose, and I have used it with the best results.

Dr. Bishop. I have used it, in a few cases, around the margins of the gums, where they were sensitive; and I have instructed my patients to use it freely with a brush.

I have found it beneficial, in some cases, in the removal of such sensitiveness; but whether such result has been due to the irritation of the brush, or the medicinal powers of the tar-water, I am not positive.

Dr. Sichel. The chemical action of the tar-water can have only a healing effect on the gums.

SECOND DAY.—AFTERNOON SESSION.

The Association was called to order by President McLain at 2:30 P. M.

The minutes of the morning session were read and approved.

The Relative Value of the Cuspidati.

BY F. A. BREWER, D.D.S.

I frequently am disposed to wonder why the importance of these special organs of defense is not cherished with that true regard they so richly deserve, by more of the members of our profession. Their sacrifice is so frequent, not alone by the more indiscreet, but also by the more deserving. Such recognized carelessness cannot prove otherwise than painful to the more sensitive pathologist. Close and persistent observation, as well as analogical comparison of these special teeth with the remaining series, must convince one's better judgment of an additional obligatory mission on their part, in their work of the life, as well as that of the functional subserviency of facial prominence, and organs of comminution. If one will but exercise his perceptive faculties properly, he will agree with the author, that the above function is not only fulfilled, but in addition thereto, they serve as special wedging "pins," not only for the normal retention of the anterior teeth, but also for those more posterior, as well as exhibit their prowess as special protectors in resisting both concussive and disintegrating influences. In order that we may substantiate the grounds for such claims, as well as to offset opinions derogatory thereto, we will endeavor to present some important reasons as a basis for our argument: 1. Common sense teaches one that the position these organs occupy within the arch of the maxilla is one where there must naturally exist a greater combating occludent force than elsewhere throughout the arch. 2. By their increased length of fang-surface, through a greater depth of implantation within the jaw, thereby giving them firmer support, they are better enabled to withstand the ordinary concussions, than their more anterior neighbors of the incisive class. Again: the additional length of these teeth, as found in the superior jaw, by which nature anticipated a greater strain brought

to bear upon the region of the superior arch, as compared with the inferior, confirms our conclusions with a degree of certainty. 3. It will be noticed, moreover, that the prominent convexity of their lingual and labial surfaces teaches plainly the wise forethought which nature's God had, in providing the necessary bulk of enamel and "dentos," to be acted upon previous to an impact occurring to their more ill-conditioned incisive neighbors. Why, sirs, their very typical character throughout points most conclusively to such evidence. Again is this shown by the delay in their eruptive period, in many cases by not making an appearance until a majority of the whole series have fully erupted; and in some instances, not until their predecessors, the second molars, had not only appeared, but had even assumed their true position in the arch. A safe hypothesis is thus formed, that nature so designed, in order to serve as prime factors in the duration of the original whole series, not only through ordinary life, but to a *ripe old age*. But, notwithstanding the above reasons should suffice to convince an ordinary mind of the justness of our plea for the preservation of these teeth, we would say, that we have still further evidence in substantiation of our theory, as furnished by the occasional occurrence of cases in our own practice, relating to the evil effects of the early loss of the incisors of the superior jaw, induced through a premature removal of the cuspidati. As two cases are fresh within our memory, we will refer to them. In one case, aged 44, a diagnosis revealed the disintegration of the entire osseous integuments, embracing the whole length of the labial alveolar region, occupied by the roots of both superior central incisors, as well as the mesial septa, and a part of their lingual investments. Also, did we find an absence of the mesial septa, and a part or quite one-half of the outer walls of the adjoining laterals, as well as a portion of their lingual attachments. All were loose, elongated, and thrown far beyond their normal limits; and in fact, were merely sustained by their ligamentous tissue.

Another case, aged 47, came under our care, with the loss of nearly or quite two-thirds of the labial and mesial walls of both superior central teeth; also a part of the mesial septa of both adjoining laterals. All four were loose, and suffering from periosteal congestion. The two centrals were not only elongated, but also, like case No. 1, thrown forward entirely from their normal axes. In both of these cases we found the canines absent, having been extracted soon after making their appearance. As they did

not erupt until the fourteenth year from birth, of course I found their usually assigned position in the arch closed and occupied by the first bicuspids. The cuspidati, in both cases, had been sacrificed upon the grounds that the bicuspids were of more intrinsic value as masticators. On examination, the lingual surfaces of the incisors affected were found to be much worn by attrition, as was also the cutting edge of the inferior incisors, and coronary portions of the canine and bicuspid family of both jaws. In one case, the patient dates the commencement of this trouble—that of soreness of both the centrals at their bases—at about the age of 32; in the other case, at the age of 35 or 37. The services of the family dentist in both cases came early into play; and the scaler and scalpel frequently indulged in, afforded but temporary relief. Finally, finding the basilar disintegration continued, both cases had been abandoned, upon the ground that the primary lesion originated from a constitutional cause. Our diagnosis failed to corroborate this opinion. These patients were both stout, healthy, and of a vigorous type of manhood. Had there existed other indications, or a presentment of mineral poison, such manifestations could have been better observed in the posterior organs, by a looseness of the *dens sapientiæ*, and second molars; but these teeth were found firm and normal. So with the adjoining series. All questions relative to undue luxation of the teeth affected were answered in the negative. In fact, the diagnosis of both cases were sufficient to convince the most skeptical of the fact that the true primary cause came from the absence of the cuspidati. Still there may be a difference of opinion relative to such effects being based on constitutional grounds. However, the fact will not be denied, that in those cases of scissors-form articulation arising from abrasive influences, even where the full complement of the teeth is normal, there will be observed a loss not merely of the cusp, but fully one-third or more of the coronary portion of the cuspidati, previous to an attack upon the incisors. Also may be noticed the same phenomena in cases of non-interlocking, and when the whole dental series become involved. Again: it cannot be denied, that by the presence of these special auxiliaries, an undue anterior articulating motion is more or less arrested, and the concussive force, so fatal to the incisors, greatly lessened, thus preserving the labial maxilliary integuments to an indefinite period. More noticeable will the intrinsic value of their assistance be observed in cases of absence

of the central teeth, second bicuspids, or first and second molars of each jaw. It must be borne in mind, however, that in our remarks we make no reference to those cases of interlocking where the diametral proportions of crown surface, both in breadth and depth, are equal; but more especially to those organs whose transverse diameters reach three-eighths or nearly one-half inch, and whose crown length equals or even exceeds the length of its root, which type of tooth, we are well aware, is unable to withstand the great strain brought to bear upon it, as in the former class. Few are known to do duty free from abrasion for the space of twenty-five or even twenty years. Therefore, they need all the support possible to maintain their basilar integuments. Hence, much nicety of judgment becomes necessary when called upon to sacrifice the cuspidati. Let me ask, that before the forceps are applied for carrying out this fatal design, that we stop and ask ourselves the question, What damage shall we inflict to the remaining series by such sacrifice? If decayed seriously, can we not so restore it in such shape that it will serve better in combating articulating forces than an artificial substitute, which we know so readily yields upon pressure through the congested state of the rugæ? Surely, a pivoted tooth is much superior. It is a lamentable fact, that the progenitors of our profession have failed in their teachings to impress upon the minds of the less thoughtful, as well as the new beginner, the importance of looking well to the defense and preservation of the cuspidati, in order to prolong the existence of the series to an advanced age — a period certainly when the presence of the whole series is as desirable as during youth or middle age. Who will question, that an old man does not need his teeth as well as a young man? Does he not feel just as proud of them, if not more so, especially if they are not diseased? Should we not try, therefore, to preserve them for him in his old days? Will he not look to us as the natural guardians for their preservation? If not, to whom? And in order that our professional ability may not be questioned by the world at large, we should, as practitioners of a beneficent art, give more attention to the needs of an important condition as the one under consideration. So partial are we to the value and necessary presence of the cuspidati, that even though their eruption should not occur until the twentieth year from birth, we should, under all circumstances, sacrifice one of the bicuspid family, either sound or unsound, whether the arch be crowded or not.

The oral series has been likened unto a Pandora's box. Verily, are not the cuspidati the keys that lock it?

Dr. W. J. Younger. Speaking of bicuspids, and the filling of their roots, I will mention a case.

About eighteen months ago, I placed a crown upon a bicuspid root. The root was very delicate, and an old abcess had to be first cured. The tooth was doing good service. The lady came to me afterwards, with the root of the bicuspid tooth in three pieces. I found the root of a wisdom tooth perfectly healthy, so I extracted it, and put it in the place from which I extracted the bicuspid. I fastened my bicuspid tooth upon the root of that wisdom tooth. I think it is a novel operation.

I have done a great deal of transplanting in the last year or two; have been very successful with it, and think we ought to do more of it.

A lady lately came to me, who had a cuspid tooth very badly crowded, in the lower jaw. The cuspid of the upper jaw, corresponding with it, was broken away, and the root was very badly diseased; and even if I could have saved the root, it would have been of no value. So I took out the lower cuspid tooth and placed it above, grinding it down so as to resemble the cuspid of the upper jaw; and I think it would puzzle any of us to detect that it had not grown there. I fastened it in for four days, at the end of which time I removed the ligatures; and that tooth is doing excellent service to-day.

Dr. W. J. Prather. I fully agree with the position taken by Dr. Brewer, the writer of the paper last read. The importance of the canines has been overlooked by many of us in former years. But as I grow older, the more I am impressed with the importance of their presence in giving symmetry and beauty to the face, and their use in mastication. The length of their roots makes a ridge perceptible to the finger, and their removal always leaves a furrow that you cannot supply with any dental appliance.

Sometimes, you will find that the arch is not large enough to admit of the retention of all of the teeth; and in such cases, if I have the control of the patient, I sacrifice a bicuspid, to give room to an eye tooth.

As a case in practice, I will mention my own daughter. In her mouth the arch was full, and there was no room for the canines; so I removed the bicuspids, and allowed the canines to

take their proper places. The arch is just full, and her teeth are in position, and present a very good appearance.

Dr. W. J. Younger. I have another case that I desire to report; that of a gentleman fifty-two years old, who had two right inferior canines. He lost one of them, and that left the other back over the bicuspid, and with a large space between it and the lateral. It looked very badly, and he came to me, wishing to have it pulled out; but I suggested putting it in place. I gradually drew the tooth into place, and it is doing excellent duty there. I think, considering the condition of his jaw, and the fact that the tooth was moved obliquely forward fully a quarter of an inch, that it is a remarkable case.

Dr. W. C. Harding. I have one case to report.

A lady came to my office, wearing a pivot tooth upon the root of a superior right lateral incisor. An abcess had formed, and I attempted to treat it in the usual way, by means of an abcess syringe, and appeared to have pretty good success; but some four months afterwards it reappeared, and I proposed to extract the root and replant it. I did so, and found that a small portion of it had wasted away. I drilled into the root, plugged the apex with gold, and built it out to its natural form as nearly as I could, and replanted, leaving the fistula open, then treated it as before. That was last November. The suppuration ceased; the fistula closed; the root became firm. I have not yet attached the pivot tooth.

To determine whether there was any elongation, I cut a wedge-shaped piece of wood, and, after the edges were closed, pushed it into the aperture until it filled the space, and marked it. Some few weeks ago I examined the case, and there is very little sign of elongation. The wedge was a very little tighter. When I return, I shall apply the tooth. The case was treated with aromatic sulphuric acid.

Dr. W. J. Younger. One of my first cases of replantation was the result of an accident. A Scotchman, who spoke the English language indistinctly, said that he desired his tooth "fulled" (filled), and my assistant understood him to say he wished it pulled, and he pulled it. I took the tooth, drilled into the pulp chamber, and took out the pulp. I consider that very important, as in this way you avoid any trouble from the death of the pulp, and periosteal abscess. I filled the root; washed out the socket, and put the tooth in. When he saw it was in again,

he closed his teeth upon it, and was quite happy; and I got two fees.

Dr. M. F. Bishop. Not long ago, a lady brought her son, a boy of fourteen, into my office, and said that she had taken him to a physician a year and a half before, who had extracted two teeth instead of one. He picked up one and put it back into its socket, and told the boy to come in again. The tooth remained in its position, and in perfect condition. It was a lower second bicuspid. I could not discover that there was, or ever had been, anything out of the way with it. It was not ligated.

Dr. W. J. Younger. I had another case of replantation. A young lady was suffering from a decayed second bicuspid. It formed a floor like the base of a triangle; whilst the first molar, by leaning forward, and the first bicuspid, by leaning backward, touched at their superior margins, and formed the two sides of a complete triangle.

The object was, of course, to get rid of the second bicuspid, without sacrificing the molar and the first bicuspid. That was impossible without taking one or the other out. I advised the extraction of the bicuspid, and while my assistant was pulling out the retained tooth, I went into the laboratory, took out the pulp of the first bicuspid, filled the canal, and replanted the tooth. In two days, the lady ate upon it. It did not require any bandaging. The bandaging or ligating is only required where the tooth is loose. Where the socket has not been destroyed, and the process around the root has not been injured, there is no necessity of ligating.

In a case where there is Rigg's disease, and the alveolar process has been absorbed, it is necessary to use ligatures, or little plates, upon the inside, and to retain the teeth in a fixed position, so that when the mouth is closed, or when there is any movement of the tongue or lips, there will be no motion communicated to the teeth. You will find that a deposit takes place around the root, by which it is retained in position, and becomes quite firm. But I would recommend in the cases of bicuspids, and of teeth in front of them, that they should be retained in position for two or three months. You will find this important.

Dr. A. F. McLain. The first case of replanting that I witnessed was many years ago. My preceptor, a weakly man, unable to extract a tooth with forceps, was using a turnkey to extract a second lower molar, which was badly decayed. But

instead of pulling out the diseased tooth, he took out a sound one in front of it. He immediately placed the tooth in tepid water, washed out the socket, and replaced it.

One day, twenty years afterwards, I met this gentleman on the street, and I said to him, "What has become of that tooth that you had replaced in your mouth?" He said, "I have got it there yet, and I can eat with it perfectly."

SECOND DAY.—EVENING SESSION.

The Association was called to order at 8 P. M., President McLain presiding.

The minutes of the afternoon session were read and approved.

On motion of Dr. Birge, the secretary was instructed to return, on application, to the authors, all papers which have not been published up to 1879.

THIRD DAY.—MORNING SESSION.

The Association was called to order at 10 A. M., by President McLain.

The minutes of the previous session were read and approved.

The committee on Dental Ethics submitted a report, charging B. L. Rhein, D.D.S., and L. L. Dunbar, D.D.S., with having violated Article III, Section II, of the Code of Dental Ethics adopted by this body. In accordance with the by-laws, the chair appointed a trial committee, consisting of Drs. Brewer, Cutlar, W. A. Knowles, Knox, and Goddard, to investigate said charges.

REPORT OF PUBLICATION COMMITTEE.

This committee would respectfully report that they had printed three hundred copies of the transactions of this Association, the cost of which was $358.90.

From this, the following amounts are to be deducted, as receipts for advertisements, viz.:

Abbey & Sons	$5.00
Folkers Bros.	8.00
S. S. White	10.00
H. D. Justi	17.50
R. S. Williams	10.00
Total	$50.50
Net cost	$308.40

As soon as it was practicable, every member was furnished, free of cost and postage, with a copy of the transactions. As it was thought some members might desire more than one copy, the committee placed extra copies at the nominal figure of fifty cents each; and with a view of affording those who might desire to procure extra copies, the secretary has placed fifty copies on sale, with Messrs. Folkers Bros.

The remaining copies are in the hands of our secretary.

In the matter of publication, your committee found itself greatly embarrassed in its operations, from the fact of the Association having failed to give the required instructions respecting the hiatus, which its predecessors, from cause, had allowed to occur for the years of 1875 to 1878, inclusive.

On strict technical grounds, this committee should not properly repair their omissions; but in consequence of the general tenor of discussions which took place on that subject—when the publication committee of 1878, reporting an inability to interpret a resolution of the previous session, authorizing it to publish a *synopsis* of those lapsing years, and therefore made no publication, and feeling that the society was not disposed to permit so wide a gap as four years between the preceding and present publications, it decided to put in print the entire transactions for the last two years, and to give merely the business portions of the years 1875–77, not only with a view of economy, but because most of the matter furnished had become obsolete and stale, excepting the contributions of 1877, many of which, possessing merit, yet, having large portions of the best papers missing—the committee felt reluctant to place the proceedings at so great disadvantage as by presenting a mutilated report. Hence their appearance in their present synoptical form.

Respectfully submitted,

A. F. McLAIN,
S. E. GOE,
HENRY E. KNOX,
H. J. PLOMTEAUX,
S. W. DENNIS.

The special committee on Dental Legislation reported as follows:

To the President and Members of the California State Dental Association.

GENTLEMEN—Your committee on legislation beg leave to report that they were unable to secure the passage of any act to regulate the practice of dentistry, at the last session of the Legislature, for the reason that the statutes require the body from which the proposed bill emanates to be an incorporated body. This Association, not being an incorporated body, could not be intrusted

by the law to carry out the provisions of such an act. Hence the failure of your committee to complete its labors.

Your committee, therefore, ask to be discharged; and would recommend that a new committee of five members be appointed, who shall have the power and authority to perfect a bill, and to adopt such measures as they may deem necessary and expedient to secure the passage of such a law at the next session of the California Legislature.

(Signed) J. L. ASAY,
Chairman Committee.

On motion of Dr. Kingsbury, the above report was adopted; and in accordance with the recommendations of the report, the president appointed to act as a committee on dental legislation the following members: Wm. Dutch, J. L. Asay, H. H. Pierson, J. S. Crawford, and J. J. Birge.

Dr. A. Warner, in lieu of a special thesis, described his method of removing devitalized pulps, which, together with the discussion thereon, is given below.

Dr. A. Warner. I desire to make a few remarks on the subject of cleaning the canals of decayed teeth thoroughly, preparatory to filling. I have often got myself into trouble by taking out the dead pulps of teeth. I have heard many dentists speak of the same trouble. If we take out the dead pulps at the first sitting, the patient usually has considerable pain inside of twenty-four hours. I commenced experimenting seven or eight years ago, and finally arrived at a method by which I completely overcame this trouble. My method requires two or three sittings.

Take, for example, a tooth that has been filled, in which the nerve has been dead for several years, and where there is no abscess, and never has been. In opening into this tooth, I would not like to disturb the contents of the root any further than perhaps the pulp cavity. I would not go into the root the least bit. Once striking the end of the root with a broach, to clean it out, involves great trouble inside of twenty-four hours. But my method is to remove a very slight portion of the pulp that would be in the pulp chamber; then to use a very little carbolic acid or creasote, on a piece of cotton, and lay it in the cavity, seal it up, and leave it there two or three days; and at the next sitting I would remove about one-third to one-half of the remaining pulp of the tooth, and repeat the application, and postpone further operations for three or four days, when the rest of the dead pulp can be extirpated, and then the root filled without causing trouble.

I have tried this treatment for five or six years, and, except where I have been too hasty in removing the dead pulp, I have had no trouble.

I am not particular what the roots of the teeth are filled with. That which is easiest used suits me best.

Dr. C. C. Knowles. Do you fill the canal up solid?

Dr. A. Warner. I am careful to seal the apex only. I have not filled one with gold for years. I seriously object to it. We all know it is a task to get a filling of gold out of a root.

Dr. A. F. McLain. I found early in my practice, by experience, that whenever I disturbed a tooth in which the pulp had died and remained quiescent, giving no trouble for years, that the moment that this cavity was exposed to the action of the air, a species of combustion, or whatever you may call it, was set up, causing a certain amount of congestion, resulting in very severe inflammation. My mode of practice was rather tentative: to introduce some anodyne into it, treating it carefully, and sealing it up hermetically after each treatment before I ventured to fill it.

I never inserted a pivot tooth at the first sitting; but treated the root for some time before I ventured on pivoting. I have never opened a cavity of that kind without having trouble afterwards.

Dr. J. J. Birge. I have had the same trouble, and I made up my mind that it was caused by applying carbolic acid too strong.

Sometimes, of late, I have opened into the pulp cavity, and left it open for two or three days, and then applied a very weak solution of carbolic acid, or Labarraque's solution; but I have had a great deal of trouble, and I will try the plan suggested by Dr. Warner.

I would ask Dr. Warner if he follows that method in all cases of devitalized pulps; for instance, in old cases where there has been ulceration, and abscesses have formed.

Dr. A. Warner. Not if there is a fistulous opening.

Dr. A. F. McLain. If there be a fistulous opening, there is no danger of this subsequent inflammation, because there is a natural exit for any accumulation of pus which may collect about the pericemental tissues. Consequently I have never found any trouble to result if a fistula already exists. It is where there is no vent that these bad results take place.

Dr. S. E. Knowles. In the case Dr. Warner speaks of, the tooth had been filled for a number of years, the pulp had died,

and there had been no abscess. That is positive proof that nothing had escaped at the end of the root. In treating such a tooth ordinarily, if we put a broach up through the end of the root, we establish a communication between the poisonous matter inside the root of the tooth and the tissue lying outside of the root; and it is perfectly natural to suppose that we will have abscess.

What Dr. Warner's treatment does, is this: he removes all he can of the poisonous matter in the tooth, without disturbing the end of the root, and by saturating that with some antiseptic, makes it inactive, and the result is perfectly plain.

Dr. A. F. McLain. Speaking of the irritation that frequently occurs after the removal of a dead pulp, I recently had a case wherein I made no dressing, and did not remove the dead pulp, but merely opened the cavity and removed the filling, where the pulp had died years before. It set up this inflammation, and I had great trouble to overcome it. For that reason, I judged it was the action of the air, which, reaching the pericemental membrane, thus produced the inflammation.

Dr. S. E. Knowles. I think that can be explained in this way: a tooth in that condition, with the pulp penned up, and with no abscess, is always under a gas pressure. Whenever a drill is passed into a tooth, we have the escape of gas, and sometimes it is followed by a slight flow of blood. I think, in a case of that kind, the blood and the gas coming out through the drill hole is due to the alteration of the pressure.

Dr. A. Warner. You are speaking of a pulp that has recently died.

Dr. S. E. Knowles. It makes no difference. That has been penned up all the time; had no communication with the outside tissues, nor with the mouth; the whole of the pulp would be in there, and in a disorganized state. It is not perhaps always necessary to carry an instrument completely through the tip end of the tooth, in order that there may be a free communication between the pulp chamber and the tissues outside of the root. There must have been some irritating matter introduced under the pericemental membrane, in order to get up the inflammation in a case of this kind.

Dr. A. Warner. I am not speaking of a tooth which is already giving trouble, but of an old dead tooth that is discolored. The only question is how to remove that dead pulp without causing

an abscess or any soreness. If the treatment I have mentioned is adhered to, there will be no soreness.

I would like to ask Dr. C. C. Knowles what he fills the roots of teeth with.

Dr. C. C. Knowles. I invariably use the very smallest kind of a broach, wind it with little fibers of cotton, making it something of the form of the cavity. I then use foil, folded once or twice. I take a very small broach, and twist it onto it with a twirl. I then carry that down as far as I can, untwist it, and leave it there; then I follow it down with the broach, and tamp it. I almost always fill the balance of it with gold.

Dr. A. F. McLain. How do you manage to get gold in the buccal roots of molars, and in the roots of bicuspids?

Dr. C. C. Knowles. I do not do it.

Dr. F. A. Brewer. There are sometimes bifurcations of the nerve, or off-shoots from the main nerve. Two years ago, I had a case of a pulpless tooth, properly treated, and filled with amalgam. I took out the filling, found the root had been properly filled, and I could not detect any gas or poison about it. I passed my probe down into it, and found as much as ten or twelve different branches of the nerve running from the mother nerve.

Has any one ever seen an abscess on a tooth in which the pulp had been calcified?

Dr. C. C. Knowles. I have, where nodules have been produced, where there was a large deposit. Of course, the whole nerve was not calcified; but nodules have been present in portions of the canal and in the crown. I have had cases of that kind when I did not know what to do; and I opened the cavity, and found an obstruction, so that I could not introduce anything into the canal. Afterwards, I drilled into it, and finally took out well-defined nodules, and found a portion of the nerve below it living, and a portion dead.

Dr. A. Warner. What is your treatment of dead pulps, where there has been no abscess?

Dr. C. C. Knowles. I should follow the treatment which you recommend. I have had trouble the same as yourself by taking them out at once. But I have also treated a great many cases of that kind, when no trouble has followed. But I have always attributed that to my care not to go through the apex with the probe, and the thoroughness with which the dead pulp has been removed, and then the use of an antiseptic immediately after the

operation. I use pure creosote for that purpose, and am almost certain that no trouble will follow it. But your method is certainly the safer one, I think, from your description. I have a great many times opened them in that way, carefully introducing a broach down by the side. I would not use pressure upon it, because that would force the effete matter through the foramen, if it is not already occupied by living nerve.

Sometimes, the root of the tooth is exostosed, where the canal is very small, and there may be a living nerve in that, and a dead nerve below it. Any pressure would force that effete matter up into the living nerve and poison it. But my practice has been to carefully run a small broach down by the side of the nerve, take it out, and saturate the canal carefully with creosote. That is, where the nerve is dead. Where the pulp was living, I would certainly take it out in that way. I always, in taking out a living pulp, use the spray, and the patient need not know when you take it out. It requires but little reduction of the temperature. I use just the smallest possible spray that I can get from the instrument, and I shaped my instrument over for that purpose. The great trouble in using the spray for the reduction of the temperature is, that you use too great a quantity of the ether, and it runs off in drops. You should use the smallest possible quantity; and then keep it so that the air that you throw through your atomizer will be sufficient to evaporate the ether as fast as it is thrown upon the tooth.

In taking out the pulp of the tooth, after opening the cavity, I put a little pledget of cotton over it, to alleviate the first shock of cold, and spray it until it can be tolerated; then I take the cotton out and direct the spray upon the pulp. In ninety-nine cases out of a hundred the patient will not know when you take a living pulp out, and you will have no further trouble with it.

Dr. W. C. Harding. The question has been asked by Dr. Warner, whether any person had seen a complete calcification of the pulp connected with abscess. I have here a specimen, No. 2, from the same mouth. It is a complete and perfect calcification of the pulp. This calcification has taken place within the last two years. The lady patient came into my office suffering with violent toothache. I cleared away the *debris*, and made an application of the acetate of zinc. After a little while I applied carbolic acid, and sealed up the cavity with a filling made of plaster of Paris and acetate of zinc, one part to five; and then covered it with

oxychloride of zinc. The lady went away, but she notified me that she had had no more trouble.

I saw the lady a great many times during the year, but there was nothing done to the tooth. At the end of that time she came in, and the filling was entirely gone—had been dissolved; and there was still some stain, but no sensitiveness. Knowing the condition of the others, I proposed to extract that tooth. She would not have her teeth filled.

Nearly another year passed, when she came in with her face very much swollen; and upon extracting this tooth, pus exuded from the socket.

On motion of Dr. S. E. Knowles, the election of officers for the ensuing year was made the special order of business for Thursday at 8:15 P. M.

THIRD DAY.—AFTERNOON SESSION.

The Association met at 2 o'clock, Dr. McLain presiding.

The minutes of the morning session were read and approved.

Dr. Dutch, chairman of the Dental College Committee, made a verbal report (see minutes), and on motion of Dr. Plomteaux, the committee was discharged.

The Management of Deciduous Teeth.

BY S. E. KNOWLES, M.D., D.D.S.

Gentlemen—I think you will all agree with me, when the statement is made, that the care of the temporary teeth is of much importance; that these organs are placed in the mouth for many desirable purposes, and that the "Great Architect of the Universe" had in view the welfare of infantile humanity, when it was ordained that there should be provided a temporary set of organs of mastication, which fulfill so admirably the purposes for which they were designed. Yet, in the face of facts so apparent, how many of us, in our every-day practice, are willing to expend the energy and muscle, exercise the patience, and tolerate the annoyances neces-

sary, in order to do what we know to be our duty, when we are called upon for professional advice regarding these teeth. All of us, I fear, must admit our weakness. It is, I regret to say, principally through ignorance of facts on our part, or a selfish and deeply rooted dislike to serve young children, that the current belief amongst parents, that the temporary teeth are unworthy of attention, has become so universal; arsenic or the forceps being the cure for all painful affections of these organs. In this paper, I shall endeavor to demonstrate that they are not solely for ornamentation, that they have many useful purposes to subserve, that they are indispensable to the health of the child, and that they bear relations to the permanent denture so intimate, as to render their preservation a matter of vital importance. The masticating area ought to be sufficiently large for the perfect division of the food of the child; for at this period of life the forces of growth are in full activity, and the demand for formative material is great; if, therefore, the teeth fail to perform this function, the stomach is forced to digest imperfectly triturated food, thus laying the foundation for future dyspeptic disorder. The time and manner of development of these teeth do not properly come within the scope of this paper. It is sufficient for us to know, that, as a rule, their eruption commences during the seventh month, and terminates ordinarily during the twenty-fourth. With the infantile disorders attending teething, we have little to do, their treatment being confided to the care of the general practitioner. We are, however, occasionally consulted regarding the propriety of lancing, and will therefore devote a few words to its consideration.

The usefulness of thus assisting nature in the process of erupting the milk-teeth has been denied. Without wishing to appear dogmatic, I desire to be put upon record as one who *knows*, that, under certain circumstances, the lance is the one thing needful to relieve the little one of all its pain. I have seen a child with rapid pulse, disordered digestion, sleepless and fretful to the last degree, cease its crying, and fall into refreshing slumber immediately after having had the lance passed through a sac containing serum, which was over an erupting tooth, and so large as to give distinctly the sense of fluctuation. When, as in this case, the effect is so marked and so immediate, there can be no doubt as to the value of this simple operation.

Concerning lancing, there is one thing that is not generally known, or at any rate, not generally practiced, which is, the prop-

er direction in which to cut, to relieve the tension over a molar.

The incisions are ordinarily made over the middle of the tooth, in a line with the curvature of the arch, and again across the center at right angles. A much better method is, to make one cut from the outer back to the inner front cusp, and another from the inner back to the outer front cusp; by so doing, the incisions are made over the most prominent portions of the coming tooth, and the edges of the wound are less liable to adhere to each other and cicatrize.

There are many anomalous conditions found in connection with teeth of the first dentition; the teeth may vary in number: cases are on record in which there were more than twenty teeth. They may present the true supernumerary form, or may be so nearly like the normal type as to make it impossible to designate the supernumerary teeth. There are also cases presenting less than the normal number; instances of twin or triplet teeth have also been observed.

I have in my collection a tooth mass with three distinct roots ranged side by side, which occupied the places of the central and lateral incisors, but were without crowns when first seen by me. There are also slight irregularities in the arrangement of the teeth in the arch. In nearly every instance, these unnatural conditions are in connection with the incisor teeth.

A case is recorded by Tomes, in which no temporary teeth were ever erupted, the germs probably never having been formed. The curvature of the primitive arches corresponds almost exactly with the curvature of the teeth of replacement; this fact would seem to plainly indicate the importance of having the temporary teeth kept with unbroken arches, until the first permanent molars are well in position, owing to the well-known disposition of these permanent teeth to move forward, if there should be room for such movement. The members of the temporary denture, as you are well aware, differ from those of the permanent in size, form, and density, the temporary oral teeth being individually smaller than their successors, and therefore collectively occupy less space.

This arrangement would be almost certain to produce crowded arches, were it not for the fact that the milk-molars occupy more space than the bicuspid teeth, and furnish the room demanded by the permanent oral teeth. In the management of the

teeth of the first dentition, much care is necessary to prevent the irregular arrangement of the permanent teeth. The temporary incisor teeth may be extracted at almost any time, without fear of producing such condition; but an error is often committed by extracting the temporary canines, in order to allow a sufficient space for the free eruption of the permanent lateral incisors.

This is the point to which too much attention cannot be paid; for although relief is afforded for the time being, the bicuspids and laterals are thus often allowed to approximate too closely, force the permanent canines too far forward, and to produce a deformity difficult of correction, because of the necessity for changing the articulation of nearly all of the permanent teeth. While a majority of the temporary teeth are still in the mouth, an irregularity of articulation of the permanent incisors is of frequent occurrence, and it is important that this condition should be recognized early, and immediately abated: first, because it is so easy to correct before their full eruption is completed; secondly, because of the undue defacement of the cutting edges of the teeth; and lastly, because of the minor evils arising from continued distortion of the arches. The second temporary molars ought in every instance to be retained in position, if possible, until the six-year molars are erupted far enough to articulate with each other, otherwise they will move too far forward, and contract the space which should be retained for the oral and bicuspid teeth. Even dead second temporary molars ought to be kept in the mouth until this time, unless it should have become impossible to avoid their extraction on account of intractable alveolar abscess, or other sufficient reason. In case of the pulps having become devitalized, the teeth ought to be extracted after the completion of the full eruption of the first permanent molars, and before the time for the eruption of the bicuspids. It is a very common error on the part of parents to regard the first permanent molars as belonging to the first dentition, and, as a consequence, many of these teeth are brought to us which are past salvation. This mistake is quite natural, as they appear so early in life, and do not replace any of the milk-teeth.

To one imperfectly informed about dental matters, such an inference is quite natural, and shows the need of proper instruction upon this point.

The first temporary molars are of comparatively little importance, certainly not more so than are the temporary incisors. The

retention of roots of the temporary teeth is a frequent cause of irregularities in the arrangement of the teeth of the second dentition.

As a rule, all crownless roots should be extracted. Another point in this connection : dead temporary teeth should be removed from the mouth sometime before their individual successors are due, because most likely their roots have not been shortened by absorption.

In the extraction of either of the molar teeth, the fact must be borne in mind, that the imperfectly developed bicuspids are in close relation with their roots, and the utmost care is to be exercised, that they may not be disturbed. The normal process of absorption is a manifestation of vital force, and is found to affect vital structures only. It is not a progressive breaking down of the old structures; but there is found to be a building up and breaking down going on at the same time, in different parts of the same root, or a building and removing alternately.

When teeth are pulpless, the cementum alone offers a tissue in which true normal absorption can take place; the wasting of the dentine being very slow, and due entirely to chemical action. Operations upon the temporary teeth, having for their object their salvation, are in order at a very early age, frequently as early as two and one-half years. It will not be necessary to enlarge upon the difficulties to be encountered; I have, however, in two instances succeeded in filling molars with amalgam at this time of life; one child is now six and the other seven years of age, and the teeth have thus far been preserved.

The period demanding the majority of operations on the temporary teeth is between the fourth and ninth years, and during this time the child is usually sufficiently manageable. I am free to confess, however, that the little ones frequently tax our patience severely: at times, beyond the limits of endurance. The preparation of the temporary teeth for the reception of appropriate filling materials does not differ much from that of the permanent teeth, but it should be remembered that the pulps are proportionately larger, and relatively nearer the surface.

If by accident, disease, or other cause, the pulp should be found exposed, capping and temporary filling are in order; then, in case of death of the pulp, and consequent alveolar abscess, the tooth is in proper condition for tapping, to supply a vent for the gases and

fluids which have accumulated. This operation is, as a rule, better practice than is an attempt to fill the root canals.

In the treatment of decay on the proximal surfaces, the free use of the separating disk is to be recommended, especially for decay of the molars; the spaces should be distinctly flaring from the neck toward the grinding surface, and from the buccal toward the lingual and palatine sides; this provides somewhat against its recurrence, furnishes surfaces readily cleansed, and of easy inspection. For decay in this locality, the plastic filling materials are in order, for obvious reasons, especially the gutta-percha and amalgam preparations; for simple crown cavities, however, whenever possible to properly use it, there is nothing like our sheet-anchor, gold. The rubber dam is especially important in operations on the milk-teeth, as the saliva is so abundantly secreted; these teeth are also of such texture as to render imperfect operations comparatively valueless; extraordinary care should therefore be used to make these operations even more perfect than similar ones performed on the permanent teeth.

Inasmuch as the object of this paper has been more to provoke discussion than to comprehend fully the subject in hand, I have contented myself with alluding thus briefly to a few of the salient points, which I trust will, with others omitted, be more ably set forth and more fully amplified by the members present.

Dr. W. J. Prather. I fully agree with the essayist in the position taken with reference to deciduous teeth. I have noticed the evil effects of their neglect for years past. And in fact, as far back as nineteen years ago, I filled deciduous teeth, and kept them in perfect condition until the time for their removal.

When my son's teeth had attained their full length, a black line showed itself at the margin of the gum. I neglected it, and in a short time the teeth were destroyed, and I had to remove them.

With my next child, at one year old the line made its appearance; and I removed that, and polished the teeth by the use of the engine. She is now five years old, and the teeth have remained good. I am confident, if they had been neglected, they would have been lost, as were those of her brother.

Her brother having had his teeth removed when he was so very young, when the other teeth made their appearance, they came in rather irregular.

Dr. S. E. Knowles. I have a specimen of a perfectly normal

absorption going on after the tooth had been filled. It is a first temporary molar tooth. That filling was in between two and three years.

Hæmophilia.

BY W. J. YOUNGER, M.D.

Mr. President and Gentlemen :

I have selected, as the subject for my paper, "Hæmophilia," known also as "Hæmorrophilia," "Hemorrhagic Diathesis," or "Idiosyncrasy" and "Bleeder Disease," for the reason that lately a case of this disorder came very nearly having a fatal termination in my office, a report of which is subjoined. Hæmophilia, as a rule, is a congenital and habitual disposition to bleed. It may manifest itself spontaneously, but more frequently it is the result of traumatic injuries. The most insignificant lesion being often the provocation to fatal hemorrhage. Thus in a case mentioned by Benedictus, of a Venitian barber who, clipping the hair at the end of his nose, punctured the skin with the point of his scissors, and died from the bleeding thus produced. When spontaneous, it is usually from the mucous membrane, generally the nose and oral cavity—rarely the external skin. It is exceptionally dangerous in circumcision, extraction of teeth, and wounds of the head and face. The first authentic account of this affection was given by Alsaharavi, an Arabian physician, who died in Cordova, about the beginning of the twelfth century. Since his writing, it appears to have been lost sight of as a special disease, until it was brought to the attention of Fordyce, in 1784—nearly one hundred years later. In 1794, Dr. E. H. Smith, of New York, mentioned the case of a child who died from hemorrhage which had previously recurred a few days before each birthday, and stopped on the birthday. Death occurred five days before the fourth anniversary.

Notwithstanding several cases were reported in different parts of Europe in the latter fourth of the eighteenth century, no particular notice was taken of this disease until a series of cases had been reported in American journals, about the beginning of the present century; and it was not until 1810, that sufficient material had been gathered for a systematic description of this disease. Nasse, in 1820, was the first to compile a list of cases reported from the time of Alsaharavi, and fully discussed the etiology, symptoms, and termination of the "Bleeder Disease," as it was then called.

Schœnlin was the first to apply to it the name of Hæmophilia, by which it is now recognized in systematic pathology. The Germanic, Anglo-Germanic, and Jewish races seem to be most addicted to this affection, especially the first, while it is rarely found in the races of Latin origin.

From the geographical distribution of the disease, it appears that it is not influenced by climatic differences, nor by elevation of regions, as cases are reported from the lowlands of Holland and Livland, as well as from the Alpine hights of Switzerland.

The true origin of hæmophilia is not known. Every writer has had his theory, none of which, however, has gained exclusive acceptance, and the disease yet remains an enigma for future pathologists to solve.

It has been asserted, that the disease was in the blood itself, and due to its impoverishment; but analysis has proved that the blood of those persons is remarkably rich in fibrine and red corpuscles. The arteries of hæmophilites are usually smaller and more superficial, and there seems to be a defect in their inner coat, while the heart beats strongly, and the pulse is hard. These latter points seem to indicate that the heart is overstimulated by the rich blood. The arteries, being small, have to resist a greater pressure, which, in turn, weakens them, and a lesion occurring, the lacerated capillaries are unable to close, in consequence of the strong pressure of blood, this "*vis a tergo*," as it were, keeping them open. Hæmophilia is not a pathological process or morbid action, but rather a structural vice—a "*vitium primæ formationis*."

Temperament seems to have but little effect in this disorder. Nor do size, condition, disposition, or complexion, though some authors assert that blondes preponderate.

Hæmophilites have great tendency to rheumatism and neuralgia, but rarely to consumption. The neuralgia affects most frequently the dental branch of the trigeminus, or fifth pair. Grandidier mentions the frequency of periodical attacks of toothache in bleeders, independent of any obvious cause as caries. The profession should, therefore, be on their guard, as experience has amply proved there is great risk in these cases; that the patient, in spite of all warnings, will insist upon the extraction of one or more teeth, an operation which is usually followed by dangerous and sometimes fatal hemorrhage, from lacerated vessels of the alveoli. Hæmophilia has gained in frequency, to an important degree, with-

in a comparatively recent period, due chiefly to the extraordinary fecundity of families afflicted with this disease, the average being nine children to each marriage, or nearly double the ordinary average; and from the marked inheritability of the anomaly, there seems to be a likelihood of the affection becoming more common in the future. The diathesis seems to have a singular predilection for males. Out of 650 cases reported, 602 were males, and only 48 females. The most remarkable and important method of propagation is *indirect transmission.* Thus, after one or more cases of this idiosyncrasy have appeared in the children of healthy parents, the affection is usually handed down, not so much by the bleeders themselves, as by their non-bleeder brothers and sisters. The transmission of the disease, however, may be considered as cognatic — that is, through the maternal source, as it is rarely developed from the agnatic, or male parent. For instance, a male having hæmophilia fully developed marrying a healthy female, the children will rarely have the disease; but a woman of a bleeder family, though a non-bleeder herself, marrying a healthy man, will have children who are bleeders.

Hæmophilia, as a law, declines with age. This is probably due to the impoverishment and diminution of the quantity of blood in advanced life.

In consideration of the fact that the blood in hæmophilia is unusually rich in fibrine and red corpuscles, the constitutional treatment of this disease should be depletives. The bowels should be kept open with gentle saline cathartics; strict rest should be enjoined, with entire freedom from all exciting causes either of mind or body. The patient should be kept on a low diet, and large doses of ergotin or acetate of lead administered. Stimulants are only indicated when extreme prostration results.

In hemorrhage after extraction, Monsel's salts and compression are usually employed to arrest it; but my favorite application is that of the rock alum, shaped into the form of the roots or tooth. This retained in the wound, with pressure, usually checks the most obstinate bleeding within a few minutes.

The alum acts in three ways: 1st, by coagulating the blood at the mouths of the bleeding capillaries; 2nd, by contracting the coats of the patulous vessels, thus securing a little tampon in the mouth of each minute artery and vein; and lastly, as a general compress on the whole surface of the wound. This failing, the

actual cautery may be resorted to. I shall now present to you the case alluded to at the beginning of this paper.

On February 11th of this year, Mr. H. M. Shepherd, a young gentleman twenty-five years of age, presented himself for treatment. He had a slight tumefaction on the facial surface of the left angle of the lower jaw, and for two weeks previously had been suffering pain in that region so intense, that for nine days he had been confined to his bed, under treatment of one of our most eminent physicians. Examination disclosed a retained left inferior wisdom tooth, which was so deeply imbedded that but a small portion of the articulating surface was visible, and in this there was decay reaching about two-thirds of the distance to the pulp, and obviously no factor in his suffering. The tooth leaned forward, its proximal articulating margin being caught under the body of the second molar, while its distal edge was not entirely freed from the ascending ramus. The molars in front were large, strong, well-formed organs, and there was absolutely not half room enough between the distal surface of the second molar and the ramus, for the body of the tooth to emerge. The consequence was, that the crown being unable to rise as the body and roots developed, the irresistible force of growth caused the absorption of the substance of the jaw itself, in order to allow the roots to form; and at last, when the apices were completed, they had not only encroached, as it afterward appeared, on the infra-dental canal, its blood-vessels and nerve, but the distal one had wound round beneath them. I have a jaw-bone here, that of a French grisette, nineteen years of age, in which you see the exemplification of this process, arrested, though, by the death of the girl before the apices had attained perfection. Notwithstanding the nerve as well as blood-vessels had been impinged upon, they had not, singularly, manifested any disposition to resent this encroachment with pain, until a severe cold, caught whilst yachting, roused their dormant energy, which declared itself in a severe neuralgia and swelling. Extraction, being the only means of removing the cause of irritation, was immediately decided on. As the method by which this was accomplished I think is original, I shall describe the operation. The pulp was first devitalized; then with a square sharp-edged drill, about a line in thickness at its hypothenuse, I commenced dividing the crown of the tooth laterally, beginning at the center, and working outwards from side to side, in a line with the prolongation of the roots. I soon had the

pleasure of finding that I had struck the bifurcation of the roots properly, and that the body of the tooth was in halves, each half surmounting a root. The two sections were then approximated, not only to loosen them in their sockets, but to enable the forceps to grasp each section posteriorly and anteriorly. An almost perpendicular elevation for the proximal, and an upward and backward curvature for the distal, and the task was easily accomplished, which otherwise would have been an impossibility. More than the ordinary amount of hemorrhage succeeded the extraction; but what struck my attention particularly was the remarkable rapidity with which the blood coagulated; and this, by the way, is an almost pathognomonic symptom, in patients of hemorrhagic diathesis. In about twenty minutes, the bleeding had almost entirely ceased, and my patient left, feeling happy in the solution of his difficulty. The next day he presented himself, bleeding freely from the sockets of the extracted tooth, the swelling still continuing. As I was very busy, I simply took some pledgets of cotton, saturated in hamamelis, and dipped into dessicated alum, and plugged the wound. This seemed to check the bleeding. I then directed him to use the hamamelis as a local application, both within the mouth and for the swelling externally. On the following day, he came again, the bleeding having recurred during the night, and still continuing profuse. I then shaped two pieces of rock alum into the form of the roots extracted, and forced them into the sockets. The hemorrhage ceased almost instantly. I then dismissed him, with the assurance that he would not be again troubled with bleeding, as the rock alum had been my sheet-anchor for fifteen years, and had never failed to arrest the most violent and obstinate hemorrhage. As he was complaining of a slight pain in the swollen part, I gave him some camphor-chloral to use externally.

By the by, this is a most excellent remedy in painful indurations, as it not only alleviates the pain by its anodyne properties, but it serves to dissipate the swelling. It is prepared by bringing together equal parts of gum camphor and chloral hydrate. A peculiar affinity exists, which manifests itself by the crystals dissolving when brought in contact—a liquid being the result of the union. For the first time my alum application proved false to the faith reposed in it; and when Mr. Shepherd appeared on the fourth morning, he was bleeding as profusely as ever. I now felt that I had a serious case before me, a genuine case of hæmo-

philia. Finding his bowels in proper condition, I gave him the acetate of lead and opium, as an internal hæmostatic, and renewed the alum plug, cautioning him to keep perfectly quiet, and not to lie on the affected side, also restricting his diet to substances that did not need mastication. On the fifth day, the flow of blood being undiminished, I applied, after syringing the sockets well first with warm and then with cold water containing a little carbolic acid, a saturated solution of Monsel's salts, carrying the first pledgets, which were small, to the very ends of the sockets, and then filling up with larger ones, until even the margins were brought under the influence of the salt and compression. On the sixth day, becoming alarmed at the recurrent flow, and his growing weakness, and feeling that more watchful care was necessary, I fitted a room in my office for him, that he might be under my constant surveillance day and night. I now became convinced, by the peculiar force with which the blood issued, as well as by the consideration of the great length of the roots and the peculiar twist of the distal one, that the infra-dental artery and vein, one or both, had been lacerated in the process of extraction. A glance at this jaw will demonstrate the possibility of such an accident. I hesitated, therefore, to renew the application of Monsel's salts, fearing it might be carried into the circulation, with disastrous results. I thereupon renewed the alum plugs, hoping by frequent applications to arrest the hemorrhage; and, as a dernier resort, to apply the galvano cautery. The bleeding now ceased for thirty-six hours, at the end of which time the blood began oozing from the edges of the wound. Tampons were now used of cotton saturated with an alum solution, and covered with dry alum, then with Monsel's salts, but the bleeding was seldom checked over four or six hours at a time.

Both sides of the face became puffy, through infiltration, the skin assumed a waxy hue, the eyes became dull, his appetite waned and grew capricious, and a general languor overtook him. Thus he was on the twelfth day. Seeing that he required treatment beyond my province as a dentist, and requiring more experience than I had as a medical man, I sent for his family physician, Dr. Hubbard, who prescribed a saline cathartic. This failing, after two days, an enema was administered, with more success. On the fourteenth day, the bleeding persisting, I applied the galvano cautery, assisted by Drs. H. H. Hubbard and Wm. F. Smith, whose excellent battery had been kindly loaned to me for the occasion.

I carried the incandescent platina to the very end of the sockets, to shrivel the injured blood vessels, and then to every portion of the patulous surfaces. I repeated the cauterization, to make the operation certain, and the bleeding—thank God!—stopped. I then turned the medical case of the patient to Dr. Hubbard, retaining Mr. Shepherd in my office in case of returning hemorrhage. Notwithstanding the stoppage of the bleeding, there still continued an exacerbation of the other symptoms. On the seventeenth day, as his bowels had not moved for over a week, and his stomach had become weak, an enema was given him, which had the desired effect, but unfortunately the strain consequent upon the passing of impacted fecal matter, known as scybalæ, started the bleeding once more—this time, however, only from the free margins of the wound; and it being night, the Monsel's salt was resorted to, with the desired effect for about two hours, when it recommenced. I then pulverized the salt, and placed it in dry, with cotton saturated with it over all, and enough dry cotton over this to make a compress on the edges when the mouth was closed. Everything now seemed to be progressing favorably, until about an hour after the last application, when septicæmia suddenly announced itself in a violent and prolonged or tonic convulsion. It was then midnight. Drs. Hubbard and R. E. Williams were immediately summoned; and at half-past three, when these gentlemen returned to their homes, there was but little hope of the patient's recovery. He was unconscious for nearly two hours from the beginning of the attack, his pulse ranging to 126. A mustard leaf was placed over the stomach, to control the vomiting, and Potass. Brom. Tr. Fe. Mur. and Valentine's Beef Extract carefully administered. Under this treatment, he happily passed through the danger of septic poisoning. On the third day following the attack of his new enemy, a small boil, which had ripened midway between the chin and angle of the affected side of the jaw, was opened by Dr. Hubbard, and after discharging its pus, plugged with a pledget of lint. On the morning of the second day it was removed, and the wound looking well, a simple compress of lint was placed over it, and retained by a bandage over the head. At three o'clock the following morning, it commenced bleeding, and when I saw him, at seven, about a pint of blood had escaped, as besides the saturation of the clothes that surrounded him, there was a clot on the bandage about six inches in length by three in breadth, and one-fourth of an inch in thickness. On the removal

of the bandage, a stream of blood flowed from the wound, as from an open vein. After thoroughly sponging out the wound, I filled it with Monsel's salt and cotton, over which I placed several folds of linen, as a compress, and retained it by a tight bandage. After this, no further bleeding from either wound ensued.

Four days later, he was safe in his own quarters. In a little over a week he was about the streets, and on the 8th of March came to express his gratitude, and to bid me "good by," as he was going on the following day to Santa Rosa, on a visit to his parents. A few days after, he complained of slight asthma; then blood was noticed in his expectorations. This was at first referred to the jaw; but on examination, the wound was found to be well filled with healthy granulations, and entirely free from blood. *The blood came from the lungs!* This slight hæmoptysis continued until the 30th, when a sudden gush of blood streamed from his mouth, and carried away in its crimson tide the life of one of the most genial, upright, and lovable men I have ever known.

In conclusion, I shall present for your consideration the peculiar features characterizing Mr. Shepherd's case.

1st. That he seems to have been the initial bleeder of his family, as the record, both in his cognatic and agnatic pedigree, fails to elicit a single case of hæmophilia — the families on both sides having enjoyed remarkable longevity and immunity from disease, there being many octogenarians on both sides, and even a centenarian of 106 in the maternal branch.

2nd. That he died from hemorrhage of the lungs, which is an exceedingly rare occurrence in this diathesis; for out of 308 cases reported by Grandidier, only 14 had this peculiarity.

3rd. That the tendency to bleed did not develop itself until the extraction of his tooth, when he was in his 26th year. From data gathered by Grandidier, the 22nd year seems to be the latest limit at which hereditary or congenital hemorrhage can remain latent.

4th. Its complication with septicæmia, which was probably due to the absorption of putrescent blood or matter from the wound.

5th. *Hemorrhage after death.* It seems, that, in preparing the body for interment, during the process of shaving, some of the hairs of the beard were dragged out; and wherever this occurred, a drop of blood appeared after each hair. Also, when a blister was removed from over the chest, blood flowed from the plastered surface.

Dr. W. J. Younger. The singularity of Shepherd's case was the post-mortem hemorrhage. When the blister that had been applied to his chest as a counter-irritant had been removed, blood flowed from the wounded surface. And when he was being prepared for interment, the places where the beard was pulled out by the roots bled, showing that the coagulating power of the blood had been entirely destroyed, perhaps all of its ability to make fibrine was gone.

It was remarkable in this case how quickly the blood coagulated during the first days of his bleeding. I had to remove the hard clots from the wound instead of wiping it out.

Dr. S. E. Knowles. I think this is a subject of great interest to all of us—something that we are liable to meet in our practice at any time. I think almost every one has had some experience in cases somewhat like this. But I have never known a case in which the bleeding was so intractable.

There is one thing particularly that I have noted in the paper that is very interesting, and that is in regard to the preponderance of fibrine in connection with this diathesis. I have always understood that in bleeders the tendency to bleed was due to there being less than the normal amount of fibrine present. And this point that the doctor has brought out is, I think, something more than a curiosity, and should serve to put us on our guard. It seems almost a contradiction of terms, to say that the blood is rich in fibrine and yet it is impossible to stop the bleeding, that being the coagulable principle. If I should, after extracting a tooth, find a clot forming well, I should dismiss all fears. I think the paper is one of very great interest.

I would like to ask Dr. Younger in what strength he uses this mixture of camphor and chloral hydrate for external application.

Dr. Younger. I use it of the full strength.

The crystal hydrate of chloral and gum camphor are brought together in equal proportions.

It may be of importance to know that the chances of hæmophilia in females is only one-third as great as it is in males.

What is exceedingly singular is, that this tendency is transmitted through non-bleeders themselves. The children of women who apparently are perfectly healthy, who belong, however, to bleeder families, but marry healthy men, will, as a rule, be bleeders. If a man who is a bleeder himself, and has the disease fully developed, marries a healthy woman, the chances are that his

children will not be bleeders, showing the peculiar cognate relation of this disease.

Dr. S. W. Dennis. How many days was it after the tooth was extracted before the actual cautery was applied?

Dr. W. J. Younger. I think it was sixteen days before the cautery was applied.

Dr. S. W. Dennis. Don't you think that if the actual cautery had been applied earlier, it might have saved a large loss of blood, and perhaps caused the case to result more favorably?

Dr. W. J. Younger. It is what I would do in another case. But the patient revolted at the idea of having an actual cautery applied, and I did not have a battery. I hoped to get it under subjection without having to resort to it. During a part of the time, I was hoping that the bleeding was merely superficial, and would stop by granulations at the bottom of the socket. But on the fourteenth day I determined to cauterize it, and got a battery from Dr. Smith. The battery had to be cleaned, etc., and that caused a delay of two days. But I do not think that delay had any effect upon the termination of the case, because he was thoroughly cured of the bleeding caused by the extraction of the tooth. He was about the street, and came to me on the 8th of March; and then I cautioned him, and told him he must be weak. He said yes, but he was getting along first rate, and was going to be thoroughly well. I think it was the removal to the country that induced the unfortunate result, as I afterwards learned from his father that when he changed from one part of the country to another, he always suffered from asthma. And this asthma came upon him when he reached Santa Rosa, and that produced a tendency to congestion of the lungs.

Dr. H. J. Plomteaux. Should a similar case apply to me, I should resort to the cautery earlier.

Dr. S. W. Dennis. The only thing that I could see that would influence the final result in this case would be the loss of blood, which lowered the vitality. These styptics, used to produce coagulation and contraction, when they fail to perform their function, lower the vitality of the particular part, and render the original structures unable to contract on their contents, the blood; and of course, the more blood lost, the more elements of the coagulum were lost. The only criticism would be, that the actual cautery should have been used earlier.

Dr. S. E. Knowles. There is one other point that the paper

has brought out, and that is, the likelihood or possibility of injuring the structures about the posterior dental foramen in extracting teeth of this description.

In conversation with a dentist, it was denied by him that a thing of that kind was possible, owing to the arrangement of the parts. I think an inspection of this under jaw would convince any one of the falsity of his position. We know the tendency to curvature exhibited by the roots of the lower wisdom teeth: even sometimes so much curvature as to form a kind of fenestra between the roots. Structures may very easily be included between the roots of the teeth abnormally placed — structures that would be injured if the tooth were extracted whole.

Of course, if we had normal jaws to deal with every time, there would be no likelihood of interfering with the contents of the inferior dental canal; but in some cases, as in this jaw, there is an abnormal arrangement of the parts, and there would be a likelihood of it. I have no doubt this occurred in the case Dr. Younger has related.

Dr. Younger. If the growth of the roots had been completed, you can see, that in the jaw exhibited here, it would have been impossible to have extracted that root, without injury to the arteries or nerves of that part.

Dr. S. W. Dennis. It is a pretty good principle to go by, that when you remove the cause you remove the effect.

Two years ago I had a young man who was making a desperate attempt to remove a wisdom tooth. It tipped forward. I extracted the second molar tooth, and left the wisdom tooth in. There was a very high state of irritation there, and the bone appeared to be dead. I have no doubt the bone was dead. After extracting the second molar tooth the case did well, and the wisdom tooth came right forward, and is there yet.

Dr. A. F. McLain. In this case, I see the wisdom tooth is developed in the angle of the jaw, and the roots actually penetrate the canal of the inferior dental artery and vein. On observing further, I see that the second molar extends even beyond that, and traverses this canal.

In cases of the hemorrhagic diathesis, you might pull out every one, and the result that Dr. Younger experienced would be just as likely to occur. In the case of this jaw, it would surely occur.

Dr. S. E. Knowles. I have a word to say in justification of Dr. Younger's decision to take out the wisdom tooth instead of

the second molar. I saw this case before the operation, and consulted about it. The way in which Dr. Younger managed this case was, I think, proper and intelligent; and if this intercurrent trouble had not arisen, it would have left the arch in a great deal better condition than if the second molar had been taken out. The roots were separated and taken out singly. It gave me a very valuable hint in regard to that; in case of an impacted wisdom tooth, instead of taking out the second molar, with only a remote chance of getting the wisdom tooth forward, the better way would be to do as the Doctor did in this case—to separate down between the roots, and take out one root, and then the other, as there was plenty of room.

Dr. W. C. Harding. A gentleman presented himself at my office, suffering from pain, as he supposed, in the left inferior second molar. On examination, I found that the pain was brought about by the partial eruption of the wisdom tooth. But he explained to me that he always suffered from hemorrhage for three or four days after his teeth were extracted.

I had, previous to extracting the tooth, prepared a number of pellets of cotton thoroughly soaked in the solution of Monsel's salts. They had been dried, or partly dried, and then re-soaked, so as to take up a considerable amount of the material. After extracting the tooth, I found that the blood came with such force, and clotted so quickly, that I could not have any success. It seemed as if, in packing those pellets down, they would be forced up faster than I could replace them. I took bits of wood, and having the tooth, I cut two separate pieces, about the shape of the roots, and soaked them in the Monsel's solution, pressed them into the sockets, and the bleeding was stopped.

He stated that this was the first time that he has had his teeth extracted and the bleeding stopped right away. In this instance, it continued about an hour, in which time he lost considerable blood.

The importance of saving the tooth was to get the shape of the roots, to make the application of the saturated pieces of wood effective. The pieces were made nearly long enough to be held in position by the tooth of the upper jaw. To supply the deficiency, I folded up a piece of linen cloth, soaked it through and through, and placed it on top of the pieces of wood, and then bound the jaw by a bandage on the face. He wore the bandage all night, and the next morning he took out the linen. During

mastication, or the working of his jaws, the pieces of wood came away, and left the clots there.

I have come to the conclusion that a good deal of suffering will be prevented, if you will refuse to allow your patients the use of water to rinse the mouth after extraction ; that the socket will fill up with blood, and the clot will form and remain in good shape. Whereas, if frequent rinsing is continued, it empties the socket. If the clot of blood can be kept in the socket ten days or more, it will come out perfectly sweet.

In case of slight fracture of the process, the use of concentrated arnica will keep the blood in its place after the bleeding is nearly stopped.

Dr. A. F. McLain. I observed some years previously the hyper-fibrinification of blood of those persons having the hemorrhagic tendency. It is remarkable how quickly a clot will form. I have taken a pair of pinchers and removed a very large clot of almost pure fibrine; and before I could return to pick out the next, there was another clot formed equally as large.

I once had a case where the bleeding occurred seven days after the extraction of the tooth. It was of a young girl about fourteen years of age; just about the period when menstruation was about to set it, and she was rather anæmic.

After performing various operations on her teeth, I remarked that there were the remains of a second molar, decayed and broken off even with the gums ; and that the gums were purplish, showing that they were in a congested state. Of course it was extracted very easily, as it was partially loose. I took out each root separately, and she went home without extra bleeding. This was on Saturday, and on Sunday night the secondary bleeding commenced. A neighboring physician was called, and gave her perchloride of iron, but without effect. Clots had formed, and as soon as they were removed, other formed; and of course the remedy did not reach the seat of the disease.

I went there about seven o'clock in the morning, and found that she had lost considerable blood. She was very pale, and lying almost insensible.

I followed the plan that I learned from Dr. Stow, an eminent surgeon, and plugged the cavity with a part of an old cambric handkerchief cut in a triangular piece about an inch and a half at one end and pointed at the other, saturating the smaller end with the perchloride of iron. With a firm plugger I introduced the

end to the very bottom of the cavity, and then I commenced folding this linen, consolidating each fold as I went, so as to fill the cavity completely. I had enough handkerchief left to form a compress, and simply put a bandage around the head. The bleeding stopped instantly. I had no further trouble. That was only one of many cases where I have pursued the same plan. I have always succeeded.

In this case, the compress was removed the third day, and bleeding commenced. Very frequently bleeding will commence on the seventh day after having been arrested.

Dr. W. J. Prather. I use a lump of Monsel's salt nearly as large as a pea, forcing it down into the socket with a piece of cotton.

Dr. W. J. Younger. It is sometimes dangerous to use Monsel's salt, where the arteries or veins are large.

It is well known that this disease is most common in Germanic, Anglo-Germanic, and Jewish races. I think in a record of six hundred cases, nearly one-half were in Germany, one-fouth in Great Britain, about one-ninth in North America, and the same in France. The rest were distributed. They were none in the purely Latin races.

It is well known that beer has the effect of destroying tonicity of one of the coats of the arteries. May it not be then, that, as these are the beer-drinking people, as a consequence, the artery is weakened, and hæmophilia has a stronger hold?

Dr. S. W. Dennis. I believe it is the experience of surgeons, that where there is the greatest hemorrhagic diathesis, Monsel's salt is the most dangerous, from the fact that this very disorganization destroys all capability of the arteries contracting on their contents. When it has once failed to do the work, the case is almost hopeless.

Dr. A. F. McLain. In most of the cases where we have hemorrhage after extraction, it is due pretty much to the want of tonicity, from the fact that the disease existing around the tooth leaves the vessels in a patulous state, and the coats are so thin from the oversupply of blood, that has existed there so long, that contraction does not take place. In removing the tooth, this blood just oozes out.

In this case that I have related, I attributed the trouble, not to hemorrhagic diathesis at all, but to the condition of the parts around the tooth, which were all blue, showing an habitual con-

gestion there. Removing the tooth, of course these vessels just emptied themselves, and continued to do so.

There was no reparative force there.

THIRD DAY.—EVENING SESSION.

The Association was called to order at 8 P. M., by President McLain. The minutes of afternoon session were read and approved.

The hour for special order having arrived, the Association proceeded with the election of officers, with the following result:

For President, W. J. Younger, M.D.; Vice-President, S. E. Knowles, M.D., D.D.S.; Recording Secretary, S. E. Goe, D.D.S.; Corresponding Secretary, H. E. Knox, D.D.S.; Treasurer, J. J. Birge; Librarian, F. A. Brewer, D.D.S.

On motion of Dr. Kingsbury, it was decided to hold the next annual session in San Francisco, commencing on the second Tuesday in June, 1881.

FOURTH DAY.—MORNING SESSION.

The Association convened at 10 A. M., and was called to order by President Younger.

Dr. S. E. Knowles submitted the following resolution, which was adopted:

WHEREAS, the Code of Dental Ethics adopted by the Association was designed to preserve the honor and dignity of the profession; and

WHEREAS, there has been manifested a disposition on the part of certain members of this body to evade the spirit while complying with the letter of law; therefore, be it

Resolved, That the Committee on Dental Ethics be hereby empowered with authority to take official notice of such acts, and to caution offending members against a continuance of, or a repetition of, the same or like offense.

Upon a second offense being committed by the same person, it shall, on proof, be considered as a deliberate insult to this Association, and subject the member so offending, to the same penalties as are attached to violation of the Code of Dental Ethics.

On motion of Dr. C. C. Knowles, the Corresponding Secretary was instructed to tender the thanks of the Association to those who had volunteered contributions.

FOURTH DAY.—AFTERNOON SESSION.

Minutes of morning session were read and approved.

Dr. Younger exhibited a patient for whom teeth had been regulated, and tipped with porcelain where fractures had occurred.

To the members of the California State Dental Association :

GENTLEMEN—Your committee appointed to examine the case of Dr. L. L. Dunbar, for violation of the Code of Ethics (Art. II, Sec. III), have done so, and find that he was guilty of the offense charged ; but that the same was committed under very extenuating circumstances, financially considered, and we recommend that he be suspended from membership for the period of six months.

(Signed) F. A. BREWER.
W. A. KNOWLES.
C. L. GODDARD.
H. E. KNOX.

Dr. Dutch moved to so amend the report that Dr. Dunbar be suspended for the term of one fiscal year, which was carried, and the report so amended was adopted.

The following resolution was submitted by Dr. S. E. Knowles, and adopted :

Resolved, That a committee of ten be elected by ballot, having the same powers as were delegated to the last Dental College Committee.

Drs. Dutch, Younger, Cutlar, Plomteaux, Lundborg, Goddard, Kingsbury, Dennis, S. E. Knowles, and McLain were elected in compliance with the above resolution.

Dr. C. C. Knowles moved that the Publication Committee be instructed not to publish the proceedings during the next year. Adopted.

A vote of thanks was tendered the retiring officers.

President Younger appointed the following Standing Committees and Essayists:

STANDING COMMITTEES.

Pathology and Surgery.—McLain, Crawford, Cornwall.
Therapeutics.—Cutlar, Brewer, Harding.
Chemistry.—Sichel, Asay, Lane.
Histology and Microscopy.—Knowles, S. E., Yates, Knowles, W. A.
Operative Dentistry.—Dutch, Richards, Warner, A.
Mechanical Dentistry.—Odermatt, Rabe, Goddard.
Literature and Education.—Knox, Robinson, Plomteaux.
Ethics.—Lundborg, Knowles, S. E., Jenkins, Birge, Cutlar.
Publication.—Younger (ex officio), Goe (ex officio), Griswold, Goddard, McLain.
Executive.—Younger (ex officio), Goe (ex officio), Dutch, Griswold, Kingsbury.

ESSAYISTS.

Electricity and its Uses in Dentistry.—D. Cave.
Cause and Prevention of Dental Caries.—W. A. Knowles.
The Future Status of Dentistry in California.—H. C. Davis.
Alimentation of Tooth Substance.—W. H. Robinson.
Interdental Splints.—W. F. Griswold.
Diseases of the Dental Pulp.—L. Bush.
Progress of Dentistry.—Alex. Warner, Jr.
Does Radical Treatment of Alveolar Abscess lead to Permanent Success?—F. A. Brewer.

The minutes of the afternoon session were read and approved, and the Association adjourned, to meet the second Tuesday in June, 1881.

S. E. GOE, *Secretary.*

TRANSACTIONS

OF THE

California State Dental Association,

AT THE

TWELFTH ANNUAL SESSION,

Held at San Francisco, Commencing June 14th, 1881.

OFFICERS, 1880–81.

President,
W. J. YOUNGER, M.D.

Vice-President,
S. E. KNOWLES, M.D., D.D.S.

Recording Secretary,
S. E. GOE, D.D.S.

Corresponding Secretary,
H. E. KNOX, D.D.S.

Treasurer,
J. J. BIRGE.

Librarian,
F. A. BREWER, D.D.S.

ACTIVE MEMBERS, 1880-81.

Asay, J. L., M.D. ..... Visalia.
Birge, J. J. ..... San Francisco.
Brewer, F. A., D.D.S. ..... San Francisco.
Bush, Louis ..... San Francisco.
Bishop, M. F. ..... Alameda.
Brooks, W. E. ..... Oakland.
Cutlar, R., D.D.S ..... San Francisco.
Cornwall, A ..... Oakland.
Crawford, J. S ..... Los Angeles.
Cave, D ..... San Diego.
Dennis, S. W., M.D. ..... San Francisco.
Dutch, Wm., D.D.S ..... San Francisco.
Davis, H. C., L.D.S. ..... San Francisco.
Dunbar, L. L., D.D.S ..... San Francisco.
Dyer, J. J ..... San Francisco.
Davis, C. E. ..... St. Helena.
Davenport, A. C. ..... Stockton.
Eaton, E. A ..... Hollister.
Fuller, C. H ..... San Francisco.
Griswold, W. F ..... San Francisco.
Goddard, C. L., D.D.S ..... San Francisco.
Goe, S. E., D.D.S ..... San Francisco.
Grady, J. F., D.D.S ..... San Francisco.
Holmes, L. B., D.D.S. ..... Woodland.
Harding, W. C ..... Suisun.
Halsey, I. S ..... Vallejo.
Jenkins, G. W., D.D.S ..... San Francisco.
Kingsbury, Wm. B ..... Santa Clara.
King, W. Z. ..... Chico.
Knowles, C. C ..... San Francisco.
Knowles, S. E., M.D., D.D.S ..... San Francisco.
Knowles, W. A., M.D., D.D.S ..... San Francisco.
Knox, H. E., D.D.S. ..... San Francisco.
Lundborg, J. A. W. ..... San Francisco.
Lane, C. S ..... Oakland.
Luce, G. J ..... Oakland.
Light, W. W. ..... Sacramento.
McLain, A. F., M.D., D.D.S. ..... San Francisco.
Morton, H. R ..... San Francisco.

McCowan, Geo., D.D.S.....Ukiah.
Misch, Joseph.....Merced.
Neumann, L., D.D.S.....San Francisco.
Odermatt, F. A.....San Francisco.
Plomteaux, H. J.....Oakland.
Pierson, H. H.....Sacramento.
Prather, W. J.....Wild Flower.
Ralls, R. F., D.D.S.....San Francisco.
Richards, C. W.....San Francisco.
Roberts, S. H.....San Francisco.
Rhein, B. L., D.D.S.....San Francisco.
Rabe, John, D.D.S.....Oakland.
Robinson, W. H.....Oakland.
Sichel, Max.....San Francisco.
Sanger, I., D.D.S.....San Francisco.
Stanley, W. H.....San Francisco.
Thompson, W. F., M.D., D.D.S.....San Francisco.
Warner, Alex., D.D.S.....San Francisco.
Wilbert, J. L.....San Francisco.
Whipple, T. S.....San Jose.
Warner, J.....Oakland.
Yates, L. G.....Centerville.
Younger, W. J., M.D.....San Francisco.

HONORARY MEMBERS.

Prof. J. Taft.....Cincinnati.
Prof. Wm. H. Atkinson.....New York City.
Prof. S. P. Cutlar.....Memphis, Tenn.
Prof. Homer Judd.....St. Louis, Mo.
Prof. J. Foster Flagg.....Philadelphia, Pa.
B. S. Codman, D.D.S.....Boston, Mass.
O. D. Munson, M.D.....San Francisco.
Geo. A. Mills.....Brooklyn, N. Y.
E. S. Belden, M.D.....San Francisco.
J. H. Wythe, A.M., M.D.....San Francisco.
E. F. Bunnell.....San Francisco.

CORRESPONDING MEMBERS.

Geo. A. Mills.....Brooklyn, N. Y.
Jas. Taylor, M.D., D.D.S.....Cincinnati, Ohio.
Prof. H. A. Smith.....Cincinnati, Ohio.
D. C. Hawxhurst, M.D., D.D.S.....Battle Creek, Mch.
M. H. Webb, D.D.S.....Lancaster, Pa.

TRANSACTIONS

OF THE

California State Dental Association,

TWELFTH ANNUAL SESSION.

San Francisco, June 14th, 1881.

FIRST DAY.—MORNING SESSION.

The Association met at 10 A. M., in the Palace Hotel, and was called to order by the President, W. J. Younger, M. D.

Dr. Dutch, Chairman of the Executive Committee, recommended that the hours for holding the daily sessions be from 10 to 12 A. M.; 2 to 5, and 7:30 to 9:30 P. M.

On motion of Dr. Dutch, the reading of the President's Annual Address was made a special order for 2:15 P. M.

FIRST DAY.—AFTERNOON SESSION.

Dr. Allison Van Denburgh was regularly admitted to membership.

The hour of special order of business having arrived, Dr. Younger read the President's Annual Address.

The President's Annual Address.

Gentlemen of the California State Dental Association:

It is with feelings of pleasure and pride that I stand before you to-day as the presiding officer of the society that contains nearly all there is on this coast of worth and intellect in our profession. As I look upon your earnest faces, and consider the sacrifices many of you have made to be here, the great distances overcome, the loss of time suffered, the inconveniences, discomforts, expense, and fatigue of travel endured, I cannot help admiring the spirit of devotion shown by you to professional interests, and your appreciation of the advantages of fraternal intercourse in mass.

No one can spend an hour or a day here, much less a session, without learning something that will be of advantage to himself and his patients. At least that has been our experience. We have been taught in these assemblages, not only by those who are considered the wisest, but by those who are deemed the least capable. No one, however ignorant, but may stumble upon a truth that has eluded the most learned; and it is here that he will tell it. Simple learning will not make a man a good worker; it often happens that the humble but earnest toiler achieves results that have baffled the more learned and distinguished practitioner. What he lacks in education, he compensates for by greater skill and good sense. The educated man is often a theorist, with but a vague idea of those details that his less famed and uncultivated brother has been compelled, from his humble entrance in the profession, to make himself acquainted with. Hence the uneducated dentist is often the more skillful and practical man. He has had to feel his way along the foundations, and in doing so discovers gems that the theorist overlooked. It is the slave, and not the master, who discovers the diamonds; the humble diver, not the merchant, who brings up the pearls. This is as true of other professions as of ours. A highly educated gentleman, who has retired from the practice of the law, gave me as his reason for so doing that he could not compete with those who had acquired their knowledge of practice as office-boys. They, in doing the drudgery of their employers, had acquired an acquaintance with details that could not be procured in college, but which were nevertheless more essential in the practice of the law than all the book-learning that he had devoted so many years of his life to ob-

tain. And all his knowledge of the classics, of Latin and Greek, of French, of German, of Italian and English, of History ancient and modern, of Literature, Belle-Lettres, of Science and Political Economy, went for naught, when brought to bear on the tricks these office-boys had learned.

These remarks are made, not for the purpose of detracting from the high culture our colleges impart, for they are a *sine qua non* to the welfare, standing, and progress of our profession, but for the double purpose of making the learned respectful to those who are not, and placing the non-graduates on a footing in this Association with the alumni. So we shall have theory and practice combined.

The great advantage of these associations is, that it brings together all classes of the profession; all orders of mind and practice; and in the papers read, reports presented, and discussions that take place, ideas and facts are brought out, of the utmost utility, that, from the modesty or disinclination to write on the part of the generator or discoverer, would never otherwise be known. Besides, association has the effect of developing thought, lessening rancor and jealousies, awakening interest in one another, forming friendships, and so uniting the profession, and advancing it in its great and humane work. I tell you, brethren, that the man who remains away from these meetings because he "can learn nothing" is a fool to himself; and he will one day find, to his sorrow, that he has been passed in the struggle for superiority, even by those members he held in most disdain.

There is perhaps nothing that indicates the improving status of our profession so much as the increasing number of our journals, the ability with which they are conducted, the breadth, scope, and character of their articles, and the scientific attainments, erudition, and learning displayed by the writers.

The great importance that our profession has now attained in the eyes of the civilized world, the absolute necessity for its existence in the needs of suffering humanity, and the deference that is being shown it by those professions which had their beginnings in remote antiquity, should make us now independent of the desire to have *dentistry* considered a specialty of medicine. Nevertheless, it is a claim that is being persistently put forward by some of our most learned writers and debaters. I think, however, that this demand is but the evolution of the secret longing to clothe our new-born profession in the honored garb of

this veteran of art and science, and invest it with the hereditaments, respectability, and traditions that belong to the great school of medicine; besides more clearly justifying the use of the doctorate assumed by every individual practicing dentistry. In our judgment, the initial mistake was in conferring the decree of doctor on a practitioner of dentistry. The title is a purely scientific and literary one in its character, and has no connection with art and mechanics. Yet dentistry, as practiced in the present time, belongs as much to these latter as to medicine. The ambition to be called "Doctor" we presume must be considered as an outcropping of the national *penchant* for title. Surgery, in its entirety, is much more closely related to medicine than is dentistry; yet in England, a surgeon would immediately correct any one who should call him "Doctor." *His* title is "Mister," but nothing seems more repugnant to American ideas, than this simple prefix of "Mister," and so we have no end of Captains, Majors, Generals, Governors, Senators, Honorables, Judges, Professors, and—Doctors. I have too exalted an opinion of our profession, am too conscious of the grand work it is doing, and the noble aspirations of its nature, to wish to borrow the plumes of any other profession to garnish it with. It seems to me that in doing so we are but "painting the lily" and "gilding refined gold." However, the title of doctor is now applied to us by common consent, and conferred on members of our profession, by institutes of learning, colleges, and universities, and so, I suppose, we shall have to retain the appellation. Dentistry, as a profession, is an anomaly. With the exception of ours, each profession requires a distinct order of mind. A cultivation of a special faculty, a concentration of thought in one direction; and as this is possessed by a votary, so is his success in the profession in which his aspirations lie. Dentistry, however, requires for its complete administration several diverse qualities of mind. Hence, a broader intellect is needed to be a thorough dentist than a practitioner in any other profession. Dentistry wants the varied genius of a Michael Angelo. He was successful as a painter, sculptor, poet, architect, and military engineer, and would no doubt have made a perfect dentist had he lived in our time; our own Story is a lawyer, sculptor, and poet. But how rare are intellects having this versatility of talent. Yet dentistry demands such a combination. It requires the talent that would make a good physician, the talent that would make a good surgeon, the talent

that would make a good mechanic, and the talent that would make a good artist. There exists in Australia an animal that scientists are at a loss to classify; for while it has the characteristics of a fish, a bird, and a beast, it is none of them. So *dentistry*, necessitating the knowledge of a physician, the skill of a surgeon, the ingenuity of a mechanic, and the eye of an artist, stands as the *ornithorhynchus* of the professions.

Whether dentistry is a specialty of medicine or not, one thing seems certain: that a more thorough medical education is necessary than is at present allowed in the curricula of our schools, to fit the dentist to render to science and humanity the benefits that his experience with the dental organs and oral cavity is his peculiar province to develop. We must not look at the teeth simply as objects to be extracted, filled, or replaced by artificial dentures. This is simply the mechanical portion of our art; nor from the artistic point which regards their effect on the beauty of the face; nor from its more practical one, of their use in mastication: but as organs having subjective and objective relations with the whole animal economy, or their condition as indicating disorder in the system, or as a cause of irritation in other organs, and of their effects on the progress of disease.

There is a *terra incognita* that yet lies between the practitioner of medicine and him of dentistry. Pioneers from both ranks are exploring the unknown realm; but as yet their efforts are simply individual. Sufficient, however, has been gathered by them to establish the fact of the wonderful sympathy that exists between the eyes, ears, stomach, brain, and nervous system, with the teeth and gums; their dependence for their perfect health on the soundness of the latter, and the pathological reaction when these are in an unhealthy condition. This proves the necessity for the most absolute conservatism in dentistry.

I hope the day is not far distant when the person who extracts a tooth unnecessarily, through ignorance or want of ability to save, will be subjected to punishment in our tribunals for malpractice, as the incompetent physician or surgeon who sacrifices any of the other organs necessary to health, beauty, or life. I am aware that physicians do not sufficiently appreciate the importance of saving the natural teeth, and I am afraid there are too many in our own ranks who are equally culpable in their ignorance.

We know that, as an expression of hereditary transmission, we

have malformed teeth—the stamp of parental sin and negligence. We know they betray the existence of the exanthemata in early childhood; but we do not yet realize their value as diagnostic agents in certain maladies, nor the effect of their condition on the general health and the progress of disease. Dr. Sexton, who has charge of the Ear Infirmary of New York, in a prize essay delivered before the Medical Society of the County of New York, announces that one-third of the ear troubles he has had to treat were due to pathological conditions of the teeth. Several English surgeons have lately been discovering cases of neuralgia, sciatica, dyspepsia, lameness, pains in the ankles, abdominal tumors, strabismus, and even bleaching of the hair, resulting from the same cause. The diseases due to an ill condition of the oral cavity and dental organs, we believe to be much more serious than at present recognized by dental and medical practitioners. The presence of tartar alone, I believe, exercises a pernicious influence on many disorders of the system, especially those of zymotic origin, and deserves most serious inquiry by medical men. If the blood is poisoned, and disease generated by miasma, sewer-gas, exhalations from cesspools, graveyards, etc., which are simply the emanations from decaying vegetable and animal matter, and introduced into the system by inhalation, how much more serious must the condition of that patient be, whose mouth contains the noxious influences in the incrusting tartar! Such a person can never draw a pure breath of air, let him go where he will—to the mountain tops, where the zephyrs know no taint, or amid the healing balm of the forest trees—his every inspiration is made foul the instant that it passes the lips, and goes to the lungs, freighted with the poisonous matter contained in his own mouth. How can such a person get well, when he carries forever with him an aggravating cause of the disease that prostrates him? May not the tartar, in depressed condition of the system, be in itself a sufficient cause for septic trouble, or may it not turn the scale in the balance between life and death? I have asked several of my medical friends to examine the condition of the mouth and teeth in typhoid and kindred cases, with the view of determining the effect of tartar and decayed teeth on the progress of those diseases, and I hope at our next convention to be able to report something definite in this connection.

It was my joyful expectation, when you honored me with the presidency last year, that it would be my proud privilege at this

session to announce the glad tidings, that the object that had entered into the aim of this organization at its incipiency, about which we had talked so much, hoped for so continuously, and striven for so earnestly, was at last an accomplished fact, and that under the benign *ægis* of our great University, there was in full and perfect fruition a Dental College. We had reason for this expectation in the fact that, through the generosity of a retired and opulent member of our profession, a suitable edifice had been presented to and accepted by the Board of Regents, for the purpose of dental instruction; and that, moreover, two of the dental chairs had been already filled by them. But further than this, nothing seems to have been done. The embryo college walls still stand as they did eighteen months ago, when a generous impulse dedicated them to learning; its portals closed, its halls darkened, and its chambers silent, gloomy in the consciousness of an unfruitful gift. It was my intention, when I began, to have discussed various other topics, chief among which were those of transplantation and enamel inlaying; but the weary length to which this address has already dragged itself admonishes me that it would be neither justice to those subjects nor kind to you to thrust them upon your fatigued attention. I have therefore determined to present the remarks on these matters in separate papers during the session.

I expect a great deal from the gentlemen appointed on the different committees: they were selected with due regard to their well-known abilities, and I do not think they will allow their names to appear simply as good labels on empty bottles. In concluding, I beg to thank you for your respectful attention to this imperfect address, and hope that during the session we will all act and speak as becomes brothers engaged in one great cause, working together towards one great end. Let us not indulge in acrimony; but give to one another patient, respectful, and considerate attention. Let each say what he has to say in the pure spirit of professional interest. Let no false delicacy, restraint, or pride stand between us and knowledge. Remember that it is not alone for ourselves that we meet here, but for the interest of humanity. Let us be manly, truthful, earnest, and inquiring; and as we do our part with integrity of purpose, so shall we be blessed in our mission, those coming to us benefited, and our profession glorified.

Dr. Sichel, of the Committee on Dental Chemistry, stated that he had prepared no report, but would be pleased to demonstrate his method of manufacturing plastic filling materials, if the Association would set apart an hour for that purpose.

On motion of Dr. Robinson, from 10 to 11 A. M., Wednesday, was made a special time for that object.

The corresponding secretary read the following communications:

To the California State Dental Association:

GENTLEMEN: Allow me to make a statement with reference to the property donated by me, in trust, May 19th, 1879, for the dentists of California and the Pacific coast, and held by the Regents of the State University; by this deed of trust, I have parted with all interest and control of any portion of the same.

I would here state, it is now considered by them that a reasonable time has elapsed in which the dentists could have availed themselves of its use for college purposes, and it is now optional with me to declare it forfeited for non-use. It is not my desire to thus peremptorily declare that your rights have ceased in this property, without notifying you that, up to date, I hold your claim good, but can promise nothing for the future, except that immediate action is necessary to be taken by you to raise the money and put this college in operation, if you desire to secure this donation. I consider it my duty, and a matter of good faith, under the circumstances, to inform you not to expect any especial favor or effort on the part of the regents to force this donation on your Association; for there is a strong probability in my mind, if not used immediately by the dentists for the college, in compliance with the trust, the regents can and will take possession and use it themselves, and all this property included in their deed of trust they will hold as the property of the University. I would here say, that the subject of their occupation of rooms now belonging to the dentists has been under consideration for several weeks, and a committee appointed to examine them and report, which was attended to several weeks since. I apprized them that a delay until the annual meeting of the State Dental Association was desirable. It is in contemplation to remove their office from Pine Street, together with the University State Land Office, where

for two rooms they now pay $50 per month, on third floor, which they desire to save, and are only waiting to see if the dentists are going to occupy them. Joseph W. Winans, Esq., one of the regents, is also their legal adviser, and is not engaged by the *dentists* to *attend* to their *interests*, but is attentive to the interests of his clients. I think I comprehend the situation, and can say, what *has* been *done* by *me*, if not *all desired* by the dentists, was done in good faith, and I have, for two years, *preserved* their *rights*, but can promise nothing for the future, unless occupied by the dentists for a college; but they never have been in possession of this property, and should the regents take possession of these rooms, I would ask what power the dentists or any one, have to oust them, or make them pay rent to the dentists, as they are the trustees of the University of California, and they may not be of the opinion that a Dental College is the shortest way to Heaven. I make these remarks for the benefit of the dentists, and not for the public, that they may have a clearer view of the situation, and act on their own judgment. I have nothing further to urge or offer, only that I have parted with all my interest in this property, and the regents *understand* and *comprehend* the *situation*, and will *invite* no Dental College *incumbrance* on a property that I estimate, when wanted for use, is worth not less than $25,000, taking into consideration that it is to be forever free from taxes or assessments, or cost for streets, or outside building repairs of any kind; and no one could blame the regents for doing the best they could, without using fraud, to secure to the State University, property rejected or refused by the dentists, after waiting two years without being claimed or used; and there is and can be no other party except the University that can claim it, and when they find $25,000 worth of property lying round loose, without a claimant, it is worth taking care of in these times, and I apprehend they would hold it as against all other claimants, by their trust deed of conveyance. Henry G. Hanks, appointed by the State to manage the State Mining Bureau now located on Pine Street, with a committee, yesterday, June 11th, examined this property, with reference to having two more stories added to the building, to accommodate the collection of minerals, and says that he would move in these rooms at once, if he could get sufficient room. He is now paying $250 per month, and has got to move by July 1st, but will take storeroom and an office, and wait until arrangements can be made with the regents, in case they can agree on a

long lease, etc. A committee were to have met this (Saturday) afternoon, to confer on the subject, as he would prefer to occupy State property, and be permanently located, and has no objection to this location, when he can get sufficient room to accommodate this large and growing collection of minerals, etc.

In conclusion, let me say, should the dentists conclude to avail themselves of this donation, and the accruing benefits of more room, as provided in the trust deed, etc., and immediately raise the money to open this Dental College, then permit me to submit the following, for your consideration: In case the subscription method is not adopted, which is the simplest and shortest, in my judgment, then I would suggest a stock company, organized under the State law, with a capital of say $10,000, but to issue no more stock than is necessary to make up the required amount, in order to furnish the college. Let the shares be in $10, $20, and $50 lots, bearing one per cent. per month, to run ten years, and provide for the interest and sinking fund, interest to be paid monthly or quarterly, from the first receipts, and before any fees for lecturers, professors, or demonstrators are paid — the necessary current expenses to be met first, then the interest, and an amount laid aside necessary to liquidate the issue of scrip in ten years; and whenever a few hundred dollars of this fund was in the treasury or bank, to the credit of this fund, notice be given, so that persons who would surrender their scrip on the best terms, the same would be first taken up, giving outside parties an opportunity to buy, as there would always be some small capitalists, for a one per cent. investment. Also, some who invest, from the country and city, and would like to have dental operations performed at the college, where the *price* for them and the benefit of the students would be a consideration, when this scrip would be received as cash, and constitute some portion of the receipts, together with fees paid by the students. These expenses are to be first provided for; when the balance would belong to the professors, lecturers, and demonstrators, to be divided as they may agree. All the personal property purchased with this money, together with the joint note of the faculty, to stand as a security and pledge for the payment of the interest and sinking fund for the redemption of this scrip, thus showing the good faith and inspiring confidence in the parties holding this indebtedness; and in case of any change of officers, their successors should take and assume the same responsibilities, and hold in trust this property, and in this way

working out the problem on a miniature scale, and serving to bind the dentists by a unity of interests, which is admitted to be one of the strongest chains that holds the British subject, and causes him to sing her national anthems, and the American the "Star-Spangled Banner." The dentists, instead of the State University owning the college outfit, would strengthen their hold and claim to recognition by the public, as an important member of a family of ten colleges connected with the State University, having strength and vitality in itself, without nursing, or resorting to the bottle for the lacteal fluid to give them strength to march onward in the line of progress, and do their part on the Pacific coast to raise the standard of dental science; and not let it be said that, for want of united action, the dentists here resemble the former government of Mexico, filled with an excess of leaders, who have not the confidence of the rank and file, and always ready for revolution; but adopt the motto: "United we stand, divided we fall."

P. S.—Should this last method of raising money, to start, meet your approval, after making such changes as thought best, and not active members enough of the profession to take all the scrip, call on me when you get all taken except the last $500. This hasty and rough memorandum, which I have not time to copy, please examine and make such use of as you think best, and return to me, at 319 Broadway, San Francisco.

In haste, yours respectfully,

H. D. Cogswell.

Gentlemen of the State Dental Association:

I am informed that many of you have objected to some of the conditions in my deed of trust for a Dental College. Need I assure you again that myself and wife made this gift for the best interests of the dentists of this coast? We have tried in this to show our regard for the *profession* of my *younger days*. If your Association honestly thinks the conditions of the *deed objectionable*, I assure you I will most gladly co-operate with you in using my influence with the regents to make such changes as are for the best interests of the college. If the name of *Cogswell* is objectionable, and any one of you will give *one-half as much* as *I* have *given*, I will, if possible, have the name changed to the name of the other donor, or such name as he may suggest. In reference to twelve scholarships provided in the *trust deed*, I would say that President LeConte just arranged that the *medical lectures*, when

given to *medical students*, should also be given to these twelve *dental students*, free of any cost or charge to the Dental College; and it is not contemplated by H. D. Cogswell to burden or embarrass the *Dental College* in this way, as he will not send more than one student in any one year, and *cannot* exceed the number provided in the deed, and in no case have placed in said college any student that would not be an *honor* to the *profession* and the cause of *dental science*. Another condition objected to is, that we have rooms reserved to us in the building. I would say the rooms leased to us by the State University are on the south side of the building, joining the party wall, mostly lighted from the roof, and, with the exception of one room, the least desirable in the building. Without these rooms, there is ample space, well lighted, for all college purposes, *at present;* and when more is required, the deed of trust provides that the *Dental College* shall have all the room they need for college purposes, free of *rent* or *taxes*. In the judgment of several members of your Association, who have *examined* the *premises*, there is at present sufficient available room for the *Dental College* for the next *twenty years*, in which opinion *I fully concur*. There is no provision in the deed, except that it cannot be *mortgaged* or *sold*, (see Deed, sec. 9) that under any contingencies the property can never come to me or my legal representatives, or the improvements made thereon. Of course, the dentists understand that H. D. Cogswell and wife now have only such control as the regents of the University may choose to allow them to exercise in regard to this property. I still believe the regents to be the best *custodians* of this property; but if in the future there could any changes be made that would be for the mutual benefit of all parties, I would be ready to co-operate. In the present condition of things, if the dentists are ready to open this college within *ninety* days, I will add a cash subscription of $500, they raising the balance of $3,000, which total, $3,500, they claim to be necessary to furnish the outfit and open this college; or, should they prefer the joint-stock plan, as set before them in my former communication, I will subscribe for $500 worth of this stock. This offer is made in good faith, based on the acceptance of the above terms, and not binding beyond the time stated.

Yours fraternally,

H. D. Cogswell.

Dr. Robinson moved that a committee of three be appointed to consider the subject-matter contained in Dr. Cogswell's letters, and prepare and submit a reply thereto.

The chair appointed Drs. Robinson, S. E. Knowles, and Goddard as said committee.

FIRST DAY.—EVENING SESSION.

Order was called at 7:30 o'clock by President Younger.

Dr. Dutch, chairman of the executive committee, recommended that hereafter a fee of $5 (the amount of initiation fee) accompany applications for membership, which shall be returned if the candidates be not elected. The Association indorsed the recommendation.

Dr. Birge, Treasurer, made the following report, which was referred to the executive committee:

California State Dental Association in Account with J. J. Birge, Treasurer.

DR.

1880.	June 11.	To paid	Dr. Goe (Sec.), voucher No. 1	$125 00
	11.	"	Dr. Dennis, voucher No. 2	6 50
	11.	"	Palace Hotel, voucher No. 3	12 00
	14.	"	Dr. Belden, reporting, voucher No. 4	30 00
	Sept. 22.	"	Stationery, printing, etc., voucher No. 5	8 50
1881	March 8.	"	Dr. Goe (Sec.), stamps, etc., voucher No. 6	4 00
	8.	"	Crocker & Co., printing, etc., voucher No. 7	25 50
	May 31.	"	Postal cards and envelopes, voucher No. 8	5 00
	June 14.	"	Balance carried down	136 40
				$352 90

CR.

1880.	June 8.	By balance		$ 13 90
	8.	" Received	cash of Dr. Goe, secretary	85 00
	9.	" "	" " " "	65 00
	9.	" "	" " " "	65 00
	11.	" "	" " " "	65 00
	11.	" "	" " " "	59 00
				$352 90
1881	June 14.	By balance due by J. J. Birge, treasurer		$136 40

Respectfully submitted.

J. J. BIRGE.

SAN FRANCISCO, June 14th, 1881.

Report of Committee on Dental Histology and Microscopy.

BY S. E. KNOWLES, M.D., D.D.S.

As chairman of the committee on Dental Histology and Microscopy, it becomes my pleasant duty to render such report as I may be able, but which, I fear, will of necessity fail to prove as interesting and instructive as was the report upon the same subject at our last meeting.

At that time, there had just been completed a series of researches by Drs. Bödecker, Heitzmann, and Abbott, regarding the structure of dentine, enamel, and cementum, the salient points of which were fully reported.

So far as I have been able to ascertain, there has but one article been published since our last session bearing directly upon the same subject.

The article referred to is one by Dr. Abbott, in the "Dental Cosmos," of August of last year, entitled, "The Minute Anatomy of Dentine and Enamel."

The object of this paper is to verify certain observations made by Dr. Bödecker regarding the histology of dentine and enamel. As there are contained in this paper some new points of minor detail, a short review will be in order. For the purpose of observation, the temporary teeth are better fitted than are those of the second dentition.

The mode of preparation recommended for observation, is as follows: A live temporary tooth recently extracted, or one kept for a day or two in a diluted solution of chromic acid, is finished and polished in the usual way, with the precaution of keeping the section under water during the latter part of the process. The specimen is then immersed in a solution of chromic acid of a strength of from one-eighth to one-fourth of one per cent. It is then to be mounted in dilute glycerine.

As the dentinal canaliculi are of greater caliber in the temporary than in the permanent teeth, the relations between them and their contents are much more readily observed.

In the enamel, particularly, the relations of its parts to each other and to the dentine, are very distinctly marked, as the enamel rods are narrower, and the spaces between them consequently wider, than they are found to be in the enamel of permanent teeth. A wood-cut is given, showing both enamel and

dentine magnified twelve hundred diameters, in which the minute anatomy of both tissues is clearly illustrated. In consequence of a fortunate accident during the preparation of the specimen, the hard portion of the enamel was entirely ground away, showing the beaded fibers in relation with the ends of the dentinal fibers. This is particularly pointed out by Dr. Abbott in the following words: "As a striking feature, I wish to emphasize the direct connection of the fibers of the dentine with those of the enamel. Thus, the width of an enamel rod is in full correspondence with the width of the field of basis-substance of the dentine, after the bifurcation of the dentinal fibers, near the boundary between the dentine and enamel."

The rest of the report upon this subject will be devoted to the consideration of a singular specimen of calcific formation appearing within the pulp chamber of a tooth, accompanied by an extensive shortening of the root of the organ.

This tooth was presented to me several years since, by Dr. Wm. B. Kingsbury, of Santa Clara, who related to me the following facts concerning it: This superior central incisor was extracted because of its extreme looseness, in order to substitute an artificial one on a plate. The other central was absent, and had been so for several years. At about the age of ten or twelve years, both the teeth had been injured by a blow. The tooth was not affected by caries; no alveolar abscess, or evidence of there ever having been one. The root was apparently divested almost completely of membrane, and not attached to the alveolar process. There was no history of neuralgia, or other painful affection. The remaining teeth were natural, to all appearances, only the centrals being absent.

The patient was a man about thirty years of age, and stated that he had preserved the other tooth, which he promised to give to Dr. Kingsbury, but did not do so.

Shortly after obtaining possession of this curious specimen, being desirous of having it examined by one more expert than myself, it was submitted to a prominent microscopist of this city, who considered the formation to be more nearly like bone than any other natural tissue, but was not positive enough of its identity to be certain of its classification. Since this examination was made, I have succeeded in satisfying myself of its true character, viz., a complete calcification of the dental pulp.

In determining this point, the various tissues which might pos-

sibly be found in teeth were necessarily taken into consideration. By comparing the specimen with typical examples of such growths, it was determined that while the deposit might possibly be due to the formation of secondary dentine, it was far more likely to be either true bone, osteodentine, or calcification of the various structures of the pulp. In examining the specimen, it will be observed that the tooth is much shorter than normal; this may be due either to absorption of the root, or to an arrest of development at the time of receipt of the injury; and from the manner in which the dentine is found to taper toward the apex of the root, together with the early date of the blow, it would appear most probable that the tooth had never been perfectly developed.

Tomes, in his work on Dental Surgery, states that during absorption of the temporary teeth there is often a deposit of cementum, and even bone, upon the surfaces of the roots undergoing absorption, and that absorption and deposition progress alternately, the absorption being greater than the deposition, and thus eventually removing the roots.

In speaking of absorption of the permanent teeth, he says it may or may not be pathological, and that absorption is carried on essentially in the same manner as in the temporary teeth. He cites instances of complete absorption of the roots of permanent teeth. In these cases it is noticed that the dentine about the pulp chamber resists absorption more than at other points.

The specimen under consideration was originally seventeen thirty-seconds of an inch in length, the crown and the root each occupying one-half the length. The tooth was somewhat worn away on its palatine face and cutting edge, from articulation with the lower teeth, the cutting edge being quite divested of enamel. The end of the root was roughened, as though it had been partially absorbed, and a slight cap of hypertrophied cementum may be observed. As before remarked, the whole of the pulp chamber is occupied by a hard substance of a color slightly lighter than the dentine, and at the root end, slightly mottled with whitish spots. Upon holding the specimen up to the light, the outline of the dentine is easily made out, and shows the pulp chamber to be of the same funnel shape as is to be found in teeth before the roots are completely formed. The calcified pulp is translucent, and of general yellowish color. There appears to be a slight space between the contents of the pulp chamber and the chamber walls,

for about one-third the distance, at the end toward the cutting edge of the tooth, but at the root extremity the calcific deposit is firmly attached to the dentine.

As both cross and full-length sections will be exhibited, a minute description of the appearances under the microscope will not be necessary; but it may be stated, that the general appearance bears a close resemblance to that of a recently extracted pulp, which will also be exhibited for comparison. The round openings seen in the cross section are no doubt spaces formerly occupied by the larger vessels of the pulp, and which, in the longitudinal section appear as long canals. There are no tissues in either section that resemble either bone cells, cemental lacunæ, or the tubes of the dentine sufficiently to be mistaken for them, although for a time, it must be confessed, that doubt was entertained. In order that the points of difference between the specimen and other growths may be fully understood, I have consulted the works of several writers on dental subjects, and from which I have taken the liberty of making a number of extracts.

Charles Tomes, in his Manual of Dental Anatomy, says of calcification in general: "A tissue is said to be 'calcified' when the organic structures of which it is composed are hardened and stiffened by impregnation with salts of lime."

Calcification varies in degree in the different hard tissues, being greatest in enamel, and less in dentine, cementum, and bone. Calcification occurs in two ways: first, calcification by conversion, in which the salts are deposited in the very substance of a formative organ; and second, by excretion, in which case the formative organ sheds from its surface both the organic and inorganic constituents.

The teeth are formed by the first method, and the shells of many of the mollusks by the second method. In calcification of the pulp, the change appears to have been brought about by the second method, and in this varies from the mode of origin of the normal hard tissues of the tooth.

In regard to secondary dentine, Salter, in his Dental Pathology and Surgery, states in substance that, although at a certain period of development of the tooth the formative action of the pulp is in a state of rest, it still retains its potency, and may, under favorable circumstances, resume its special function. He divides secondary dentine into dentine of repair, dentine of excrescence, and osteodentine, the two former always being attached to the walls of the pulp chamber, and the latter usually commencing in

the body of the pulp. Dentine of repair is not to be considered abnormal, but osteodentine is always indicative of disease.

In dentine of repair, the form and amount is usually in proportion to the external injury, and is usually found to be situated just over the dentinal tubes involved; but if there is a variation from this rule, it is always on the side of excessive deposit. The new growth is in more or less complete continuation with the primary dentine. There may be, however, a separation by a completely calcified zone between the old and the new. The dentine of repair is *always* due to lesion of the primary dentine, and may occur at any period of life. It has been known to affect the temporary teeth. The wearing of the enamel is not sufficient to produce the dentine of repair, but it seems to be necessary that the dentine should transmit the impression of the necessity of repair, to its formative organ, the pulp.

Osteodentine is a hard tissue, containing dentine and bone in the same growth, and is generally due to intrinsic calcification of the pulp. It bears a close resemblance to the Haversian system of bone, and may contain lacunæ.

Regarding this he says:

"Osteodentine may resemble bone other than by vascular Haversian systems. It may contain true bone lacunæ, especially resembling those of the crusta petrosa; and I have noticed this especially where there has been a preternaturally abundant communication between the pulp and the periosteum, the communication being large and short, so that the pulp and the periosteum are almost continuous.

"I have several times found teeth, having short lateral canals passing from the periosteum to the pulp cavity of the fang, in which the canal itself has been lined with a thin layer of crusta petrosa, and the same tissue has existed in the pulp cavity, either alone or mixed with secondary dentine."

This structure is always to be regarded as pathological.

Salter states, regarding calcification of the pulp, many important facts. He does not regard its appearance as indicative of a high degree of morbid action; but considers it largely reparative. It may be due to trivial causes; but is *always* preceded by some injury. The most common is in caries. It may commence at isolated points in the pulp, called islands of calcification, which are most abundant near the extremity of the fang, or in the axis of the pulp; but may, under favorable circumstances, involve the

whole of the pulp, in which condition the contours of the islands may be observed under the microscope. In regard to the frequency with which this growth occurs, he says:

"The occurrence, to some extent, of islands of calcification in the pulps of carious teeth is universal. The complete issue of this process in the evolution of osteodentine is by no means common, and only occurs under certain favorable circumstances, when the process of calcification may continue for a long period, uninterrupted by the laying bare of the pulp cavity."

The parts of the pulp remaining uncalcified continue to functionate during the life of the pulp.

The pulp tissues are calcified promiscuously, the blood-vessels being the last to become involved. They appear in less number than normal in the calcific mass. They may remain open, or may calcify, together with their contents.

Regarding this point, he says:

"The calcification is clearly not interstitial between the fibers; but swallows them up promiscuously with the other structures. This is certainly indicated by microscopical examination, and is confirmed by physiological evidence. The cells and nuclei, which are abundant in the adult pulps, share in the general change, and the former probably produce the dentinal tubes that are found in the osteodentine.

"The blood-vessels are probably the last tissues to calcify. This is certainly the case with the larger ones, some of which remain permanently patent and functional in the axis of Haversian systems of the matured osteodentine. Some, however, even of these become ultimately obliterated and calcified."

He also recognizes the probability of its ultimate conversion into osteodentine.

In regard to the formation of bone, Tomes, in his Manual of Dental Anatomy, says:

"Although much has been written upon the subject of the development of bone, yet several hypotheses are still struggling for the mastery. Most observers are, however, now agreed that the formations of bone in cartilage or in membrane are processes which do not essentially differ; but, like the resulting tissues, are practically identical.

"Thus the cartilage, calcified or uncalcified, is supposed to hold only a subordinate position to form, as it were, a scaffolding, a temporary support, to serve while the bone is being formed.

[Rollet.] According to this view, bone is the result of the calcification of a *new tissue*, the formation and growth of which precedes that of actual bone. In the case of bones formed in cartilage, this new tissue grows into and excavates the cartilage, itself springing from the periosteum or from the already formed medullary cavity. In the formation of a membrane bone, or in the thickening of a bone by additions to its surface from its periosteum, or in the deposition of cementum upon a root of a tooth, an analogous process takes place; that is to say, a new soft tissue is provided, which ossifies."

Thus it is seen in the formation of both bone and cementum, that a tissue which is capable of undergoing ossification always precedes the formation of either bone or cementum. In regard to the appearance of bone in the teeth, Wedl, in his work on Pathology of the Teeth, says:

"The greater portion of the very common *osteodentinal formations* is composed of dentine; the bony substance occurs in very small quantity, and may consist merely of a group of a few bone-corpuscles. The osseous substance not infrequently attains only a rudimentary development, and resembles that which occurs upon the cement towards the neck of the tooth.

"It has been stated that bone-corpuscles sometimes make their appearance in the peripheral layer of the blood-vessels which have penetrated the new formation. They are also met with, however, either towards the periphery of the new formation, where they occur in groups and are separated from the new dentine by globular masses, or they occur in the central portion of the new formation. Cases in which the central portion of the new formation is occupied by an extensive mass of osseous substance are quite rare, and apparently occur only when the formation acquires unusually large dimensions and presents a regularity in its development. In such cases, too, vascular canals are present in the bony tissue.

"In the new formations, both the bony and the dentinal tissues experience frequent interruptions in their development, as is indicated by the frequent occurrence of irregular, jagged cavities in the new dentine, and by the variable or dwarfish forms and irregular disposition of the bone-corpuscles."

"I have met with a few cases only of *true new formations of osseous substance* within the parenchyma of the pulp. They occurred in the pulps of milk-teeth which were undergoing absorp-

tion, and one of these cases is reported in the above-cited communications by Heider and Wedl."

In the same connection, a case detailed by Salter is very interesting. He says, under the head of the Replacement of Dentine by Masses of Bone: "This condition involves a liability to some, at least, of the diseases to which skeleton bones are obnoxious. It is probably from insufficient and neglected opportunity that I must rest a single but most remarkable specimen of abnormal structure to illustrate this subject.

"The specimen in question is a molar tooth which was given me by Mr. Topping, the accomplished mounter of microscopical specimens. It has three canals just below the neck piercing the enamel. These canals were short and horizontal. Upon sawing the tooth vertically in half, it was found that the substance around these canals, extending considerably in the crown, and down one of the fangs, was yellower and clearer than normal dentine, and it had a cancellated aspect.

"Upon examining this doubtful tissue with a microscope, it was seen to be bone, resembling very closely ordinary cancellated bone of the skeleton. This occupied about a fourth of the crown and neck of the tooth. Upon referring to the figure, it will be seen that the whole of the margin of the section is normal dentine; the bone was not merged by degrees into the dentine, but the limit between the two is defined and sharp, though irregular and jagged. The osseous tissue presents circular, oval, and irregular interspaces, like ordinary cancellated bone. Upon examining this structure with higher powers of the microscope, it is found to resemble skeleton bone more than crusta petrosa; the lanimæ are smaller, more uniform both in size and arrangement, and the canaliculi are fewer and smaller, and altogether less conspicuous. The lanimæ are even and regular, and are parallel with the outlines of the cancelli. Mixed up with these laminæ, and among them, are here and there to be seen small isolated patches of dentine.

"Here, then, we have true vascular bone occupying a considerable portion of the crown of a tooth. The specimen is, so far as I know, unique; but it is very unlikely that the morbid condition has not occurred many times before. Bone structures would be liable to bone diseases, and these occurring in teeth would, in such a situation, occasion anomalous and unexpected symptoms and results. It is probable that some such condition may have existed

in the few reported cases of abscess in the hard substance of teeth."

I have referred thus extensively to the various tissues that may appear within the pulp chamber, as the result of injury, disease, or organic defect, in order that we may bear in mind the extreme difficulty in correctly diagnosing many conditions affecting the dental pulp. When we consider the fact that calcific change in the pulp is the law in every case of dental caries, and that such condition must cause peripheral irritation of the nerve supplying it, it seems almost incredible, that, as a rule, it is not accompanied by more painful symptoms, and in such extreme organic changes as are instanced in the specimen before us, that the change was accomplished unsuspected by the patient is, to my mind, almost beyond comprehension.

The Six-year Molars.

BY W. H. ROBINSON.

This is a prolific theme to discuss, to write about, and talk about. Few in the profession know how to treat them properly. I can easily prove this. Let any one of us describe his principle and modes of practice, and most of us would not agree with him. Now, assuming that he is right would prove that most of us are wrong. The idea I want to advance at this time is not any mode or theory of practice, but to call attention to the fact that the main reason why so many six-year molars are lost, is because no dentist gets a chance to try any kind of practice on them. Let me give you my experience with six-year molars for one week. My first patient was a young lady, or rather an overgrown girl, of sixteen years. Toothache brought her to my office. She had large teeth, of good quality, except coronal cavities in molars. All her six-year molars were badly decayed; two of them were aching. She was accompanied by her father. A mild suggestion from us about filling her teeth was met by such a peremptory mandate from him—that he had come to have them extracted, and wanted no filling done—that we obeyed, and pulled out two. We then specially urged him to have the other teeth filled, assuring him that they were such good teeth that fillings would be almost sure to save them a lifetime. He looked at us sour and incredulous, and said he didn't believe in tooth-plugging. He was a man of wealth, and his family of some culture; he was a resident of Ohio, taking

with his family a pleasure trip through California. He not only looked on the loss of his daughter's teeth with pleasure, but wanted her to have some more taken out, as they were decayed, and would soon be aching.

Our next patient, a young lady, also presented a case quite similar to this. She had teeth that were beautiful in every respect. All sound except the six-year molars; two of them were aching: had been aching slightly for months, and now ached so badly that they had forced her to the dentist. Both she and her father, who accompanied her, were very anxious to have her teeth saved; had they had only a little anxiety about the matter a year or two sooner, the task could have been much easier accomplished.

Thursday we had another patient, a girl about 11 years old, both lower molars badly decayed; one aching so badly she had to come to the dentist. We extracted the aching one.

Something we said, or some previous knowledge of dental operations, gave them the idea that dentists do not fill aching teeth, so they wanted the other tooth filled, both declaring the tooth had never ached. We had serious doubts about the truth of their assertion, but we filled the tooth; cleaning out the cavity gave no sure indication of pulp exposure. We carefully capped over the nerve with warmed oxychloride, completed our filling with amalgam; and O, how that tooth did ache; and that girl danced around my office, and then said the tooth had ached badly last winter, but not this spring, but she was afraid I would not fill it if she told me. We pulled the tooth out. The next day a mother came with her thirteen-year-old son, to have his baby-tooth out, as it ached. That baby-tooth was a large six-year molar.

This was an extra good week for bad six-year molars. In all these cases it was the patient's first visit to the dentist. We think the majority of the people of California never take a child to the dentist till pain compels them. At least we *country* dentists find this so. Some of you who operate mainly for the more wealthy and intelligent classes may not find this so, but your neighbors, who do a wholesale business in advertising and extracting, more than offset the exception in your practice. My object in writing this was to bring specially before the Association this question for discussion: What means can the profession adopt to give the masses correct information about the care of their teeth, especially their children's teeth?

Take the newspaper and magazine literature of the day, and

there is less said about the teeth and their care, than on any topic of equal importance. The people are ignorant about their teeth. How shall we enlighten them? Clearly, the profession is to blame in this matter. It is ignorant, not of the information needed, but of the way to impart it to the public.

President Younger. There is a great deal in this paper of which I do not approve, regarding the extraction of first permanent molars. I think it is our duty to preserve them, and I will never extract them.

Dr. Dutch. The great trouble with many dentists is, I think, that they are too willing to allow the patients or their parents to have their own way.

Dr. S. E. Knowles. It is perfectly astonishing what ignorance is exhibited in regard to their teeth, by people who are intelligent on other points. I have had patients ask me if permanent teeth were taken out when the child was very young, if other teeth would grow in their places, seeming to have an idea that the crop of teeth was unlimited.

SECOND DAY.—MORNING SESSION.

The Association assembled at 10 o'clock to witness Dr. Sichel's method of compounding pyro-phosphate of zinc. Dr. Sichel stated that his object in thus consuming the time of the Association was to stimulate members to similar exertions, as a matter more of self-gratification than profit.

The Committee of Dental Ethics made the following report:

To the California State Dental Association.

GENTLEMEN—Your committee on Dental Ethics hereby charge Dr. J. Warner, practicing dentistry in Oakland, with having violated Article II., Section III., of the Code of Dental Ethics.

J. A. W. LUNDBORG,
S. E. KNOWLES,
G. W. JENKINS,
J. J. BIRGE.

The chair appionted a committee, consisting of Drs. W. A. Knowles, Richards, Crawford, Pierson, and Bishop, to investigate said charges.

Pathology of the Osseous Structure of the Teeth in Pregnancy.

BY A. F. McLAIN, M.D., D.D.S.

In view of the illimitable scope, together with the indefinite character of the section which has been assigned the committee which I have the honor to represent on this occasion for treatment, I thought perhaps that, by directing our inquiries to a special matter connected with pathology, it would prove more interesting, if not more profitable, than to discuss pathology or surgery in a general sense, as it otherwise would have been necessary to do. Hence, I have chosen for a theme, "Pathology of the Osseous Structure of the Teeth as Influenced by Pregnancy."

It must be within the observation of every practitioner of the dental art, that, notwithstanding the lights our boasted attainments have furnished, every effort made toward the preservation of the dental organs in that condition has resulted in utter and humiliating failure.

The local symptoms usually attending the period of gestation may vary in different cases so far as regards the quantity of the salivary and mucous secretions; but a strong acid reaction is found to be an invariable accompaniment of the disorder which is manifested in acute sensibility about the necks of the teeth, followed by erosions near the margin of the gums, softening of the enamel, and ultimately by the rapid disintegration of the dentine.

Now, although the pathological phenomena are frequently manifested in other conditions than that referred to, being often met with in young persons of either sex, and especially in individuals of dyspeptic habits, or in those addicted to the use of mineral or strong vegetable acids, still the almost universality of their occurrence during gestation, and the disappearance of the general symptons when that period has once been passed, indicates, it would seem, pretty clearly that the disorder owes much of its virulence to symptomatic causes.

The extent of local lesions in any case is governed very much by the structural quality of the teeth and by their hereditary predispositions; hence it may naturally be deduced that the least appreciable abnormal dentinal changes occur in those cases where dense, perfect dental organisms exist, in conjunction with perfect general systemic health, whereby those depressing influences

which tend to weaken the resisting capacity of the organisms are obviated.

The sympathetic influences which a gravid uterus exerts upon the stomach in producing disordered gastric secretions being an established fact, it is readily seen how the oral fluids, on becoming vitiated through chemical reactions and nervous relations of organs, conjoined to the operations of predisposing causes, the destructive processes become greatly accelerated by the augmented solvent properties of such products.

Of predisposing causes, debilitating influences, hereditary constitution, temperament, etc., have been classed by physiologists as being the most efficient. Now, how far temperament conduces to abnormal functions, aside from the control it has naturally in influencing the quality of the texture, is not positive. But we do know, that in certain temperaments, the nervous, for instance, irritability of the excito-motor system exists to a high degree, and that this natural nervous irritability, as modified by certain temperaments, and manifested through the sympathetic system, is susceptible under the play of mental emotions of so altering or perverting the normal constituents of the secretions as to render them positively poisonous. The pernicious effects of nourishing infants from the breast when the mothers are laboring under great mental excitement are too well established to render it necessary to cite authorities in proof of that fact.

Again: in erosion of the enamel, the microscope having failed to reveal capillarieswhere by the sanguineous fluids might be transmitted, or the presence of nerves, the process, therefore, cannot be attributed to interstitial absorption, as neither nutritive nor destructive assimilation obtains in the enamel.

The cause of the rapid dissolution of the teeth during gestation has been generally ascribed to defective nutrition; in that, the food lacking in the elements of ossific matters, the osseous system of the new organism in process of building makes demands which can be supplied only by the osseous system of the mother.

On the other hand, it is urged against this hypothesis, that two women, placed under similar circumstances, and having similar temperaments, and fed at the same table, partaking of the same food, will present conditions diametrically opposite, the one being in robust health, comparatively free from the usual sympathetic disturbances, whilst the other will exhibit all the symptoms described, in their most aggravated forms. The fact is, human

knowledge on this subject is limited, or, in other words, is hypothetical. That the offspring *in utero* actually preys upon the bony textures of the parent for those earthy constituents necessary for its own structures is not sufficiently proven to justify the acceptance of the theory as a philosophical truth. Neither is it to be assumed that the seemingly contradictory symptoms presented in the instances cited, an absorptive process existed in one case and not in the other, or that the difference was due to a difference in sympathetic relations of the organs.

Now, the rational deduction to be drawn from these facts is, that the assimilative functions and vital forces in one case were superior to those of the other; whilst the latter, in being unable to appropriate sufficiently of the earthy principles from her food to supply her own wants and those of the new being, her vital forces were impaired, whilst at the same time the sympathetic influences operating from the pregnant state so vitiated or altered the gastric and oral secretions as to induce chemical reactions, which, in connection with other exciting causes, produced the lesions presented.

Having shown, or attempted to show, that the pathological phenomena in this condition were due to physico-vital causes, the obvious treatment in such cases consists in employing all those hygienic means best calculated to build up the system, and control waste, such as generous, wholesome diet, fresh air, exercise, mild tonics, and the exhibition of nervous sedatives when their use is indicated. Above all, are the assimilative functions to be encouraged by the administration of nutritive stimulants, of which nothing has given more satisfactory results, in cases where they have been tried, than the soluble phosphate of lime preparations; for instance, the hypophosphites, particularly the *lacto-phosphate*, given in doses of from one to three grains, according to circumstances, at each meal. Not unfrequently, the most urgent dentinal tenderness and odontalgic symptoms, as well as the tendency to decalcification of the teeth, will entirely subside after the exhibition of this drug has been followed for a few days.

This mode of medication commends itself as much for the beneficial effects derived by the mother as for the tendency it possesses of imparting to the child good dental structures. And especially is the same course indicated toward the child, if an hereditary predisposition to bad teeth exists in the mother, exhibiting it with the view, not only of improving the structural quality

of its teeth, but also to mitigate the ills which are common to the period of *teething*—a virtue this remedy possesses to an eminent degree, as I have had occasion to witness. Its administration should begin early after birth, by dissolving the lacto-phosphate in the milk given from the bottle, and to continue its use in the ordinary food until after the first dentition shall have been completed. Minimum doses are preferable, inasmuch as when larger quantities are given a waste of the medicine is incurred, in consequence of the system not appropriating more than a certain amount. One-grain doses are therefore sufficient for all practical purposes.

Of course, in women, the local treatment should not, in the meantime, be neglected. To this end, the mouth should be rinsed with diluted lime-water or a solution of bi-carbonate of soda three or four times a day, and at night, just before retiring to rest, to pack precipitated chalk about the necks of the teeth, for the purpose of neutralizing the acids that are so apt to accumulate at the margin of the gums. It is almost superfluous to mention, in this connection, the necessity which exists for the exercise on the part of the dental surgeon of some judgment in the performance of his duties, by avoiding long and exhausting operations in these cases, especially in advanced stages of pregnancy, or when there is debility, or where miscarriages have heretofore occurred.

Here, plastic fillings, such as gutta-percha or the pyro-phosphate of zinc stoppings, become excellent temporary expedients for arresting the ravages of caries, until the patient's condition be such as to admit of permanent operations being performed.

The President. The only trouble is, doctor, we have the theoretical knowledge, but we have not had the practical, so as to be able to give personal experience in the matter.

Dr. McLain. When I first commenced the use of lacto-phosphate of lime, some ten or twelve years ago, it was in this way: There was a physician whose family was afflicted with bad teeth. He had neglected his, and his wife and all of his first children had bad teeth; and I suggested something of this kind in a soluble form. He began to use the preparation, and to give it to the mother, and the children that were born afterwards had no dental trouble at all; he continued the remedy even after the child had received his second dentition. Before I left New Orleans, he brought the boy, then ten or twelve years old, for me to see his teeth, which were perfect, and did not have a blemish. And the boy's limbs were like a giant's. Now, our medical authorities all

contend that real phosphates of lime are not appropriated by the system, but are taken into the stomach, and pass out unchanged. This matter has been tested by two eminent professors in Paris, who have been experimenting with lacto-phosphate of lime a long time. They tried it on Guinea-pigs, feeding them all alike, but giving some of them lacto-phosphate of lime, and some of them none. When they were killed, it was found that the bones of those which had had the lacto-phosphate of lime would weigh 33⅓ per cent. more than the others, showing that it was appropriated by the system.

In the matter of pains, it is a sovereign remedy. I have had occasion to administer it in San Rafael to a woman who had been suffering pain two days, and the administration cured it. Now, about the theory of the new being, the embryo, preying on the bony tissues of the mother: I think it is not true, although she has to supply all the demands; consequently, if she does not get enough in her food to supply that demand, I think in such cases this should be administered.

Dr. A. Warner. In selecting the substance from which you prepare this, is it always done from calcined bone, or some from quick-lime?

Dr. McLain. They take calcined bone, combined with lactic acid, so as to form a thick paste.

Dr. Robinson. We discussed this matter some years ago, and our minutes made me say a great many ridiculous things I did not say, nor did anybody else. Consequently, we will have to be very careful, or we will get the thing mixed again. I have been investigating one point a great deal, which is in regard to whether the human system assimilates directly from the mineral kingdom; and I must say I don't think I know as much about it as when I started, although I have the views of thirty or forty men who think they know all about it, and rank high as scientists. There is a common opinion among doctors, dentists, and others, that we can and do appropriate directly from the mineral world.

In a private correspondence with the editor of the "Ohio State Journal," he said that animals did appropriate directly from the mineral world. He had taken a number of hens, to some he had given lime, and withheld it from others; and the hens that had the lime had the thickest shells on their eggs. When I asked him where he got the lime from, he said from calcined oyster shells, so he could not answer the question at all, but confirmed rather the

other side. I have got all the wisdom of the annual report of a medical school here, and they answer my questions in the same way. The second time I asked the professor of physiology about it, he said that he had observed everything on the subject, and when he came to look it over, he said there is one thing he was dead-sure of, that we took from the mineral kingdom, that was oxygen. I don't know that we all yield that point, but I hold that we have all got a great deal to learn about this thing. That matter has been so mixed in my mind, that I am a little surprised to see others seem to have it settled in theirs. Somebody burned some limestone and found that some animals did absorb it; but then if you take nearly all the limestone in the world, and if you look at it, you will find it is a formation from the animal world, it is nearly all made up of shells from the various extinct mollusks. Consequently, that lime has been prepared already from the animal system. When I take a cup of water into my system, does it undergo any chemical change? It goes in water, and comes out water. But as to whether the elements of water in my blood are in any different condition than the elements of water in their normal condition, I don't know. And as to this lime matter, the question is, when it goes into the system does it remain inorganic lime, or is it vitalized? I do not know, nor do I know that anybody else does.

I am told there is a work published by Dr. Gangee of Manchester. I have written for it several times; but could not get it. If I could get that, I would steal his ideas and give the Association the benefit of them. I say that this point is of great interest to the dentists—" an ounce of prevention is better than a pound of cure "; and if any man can give us something to prevent teeth from decaying, it may not be so much in the dentist's pocket, but it will be a grander gift to humanity.

Dr. W. A. Knowles. I think there is one example of an inorganic substance which can be taken into the system; that is chloride of sodium.

Dr. Robinson. There is no question about that; but the substance is not vitalized; it is not broken up and separated. We need it, and must have it; but it does not undergo a change.

Dr. S. E. Knowles. My friend Dr. Robinson does not, I think, clearly discriminate. He spoke of oxygen as being a mineral. I suppose he meant to refer to it as an inorganic substance. There seems to be a rule in regard to the assimilation of matter by ani-

mals, something like this: In case a substance is assimilated at all by being made a part of an organized body, that it is best assimilated by an animal when it has previously passed through a vegetable. There are some crystallized substances, it is true, that appear to undergo a change by being made an integral part of an animal body. In case any substance is changed, although we may not be able by any test to note the fact of the change, it is necessary for it to pass through vegetable life before it can be assimilated as a part of the animal kingdom. In regard to the experiment spoken of, there was another. I do not know whether by the same gentlemen or not, which tended to show the power of animals under certain circumstances, to assimilate a great quantity of phosphate of lime. The animals were fed on a like diet, only some had phosphate of lime added. The limbs of one or two were fractured, and others remained unbroken. At the end of a certain time the animals were all killed, and it was found that in those to which phosphate of lime had been administered the fracture was in a greater state of advance than in the others.

I have tried the experiment of administering lacto-phosphate of lime in the case of pregnant women who manifested an insufficiency of that substance in the teeth, and had very little success. The fault does not seem to be in regard to the pabulum; but it seems to be a want of nutrition. There is something back of it; but what it is I do not know.

Dr. McLain. As to this intimation of Dr. Knowles in regard to the experiment he spoke of, I got my information from the same account. It was fifteen years ago that they commenced those experiments, with the view of trying lacto-phosphate of lime under those conditions. That is where I got my idea. I will say furthermore, that I do not believe that the animal system can appropriate directly any inorganic substance; it must pass through a vegetable. In certain districts—take Kentucky, for instance—the men are large and robust, and possess a bony structure, and all the animals have the same characteristic. I do not conceive that they take that from the earth; but then lime exists in great abundance in that State, especially in the blue-grass region. I think they take that from the vegetable and the animal, too. The animal absorbs it browsing, and then the man gets it.

Dr. Harding. I have found by referring to memoranda I have kept, that where women have raised the largest families, the chil-

dren have the best teeth. It is a custom in this country for women when they are pregnant to keep in-doors, a custom that results in sour stomach. Now, take it where women labor in England, and eat oat meal, you will find good teeth. It is so in all parts of the world. There are regions in the south of Ireland where they rarely see meat, and a dentist would starve to death there. And again in the north of England, where they eat unleavened bread. Now, where we find a women is constipated in that condition, the only way for her is to take exercise; and I know for a fact, that women in that condition are generally constipated.

Our Literature.

BY W. H. ROBINSON.

In writing on this topic, we will do a little bold plagiarizing and take some ideas from the review of our literature by Prof. Faught, before the Odontographic Society of Pennsylvania. His paper is the ablest analytical review of our literature that has ever been produced. You and I may not agree with all he says, but we agree with the most of it, and we agree that it is an able production from a careful student of our literature. You that have read his paper, noted that he condemns the practice of repeating the same old ideas. Too much of this would be decidedly objectionable, but if none of us should say or read anything in this meeting that has been said or written before, we would have a silent time. There is some truth in the old proverb, "There is nothing new under the sun"; hence, most of our literature must be second-hand. Few brains grasp and retain an idea the first time they hear it. Most of us have only acquired the little or much we know after reviewing it many times in many forms. Our journalistic literature is, on the average, good, but needs criticism; and Dr. Faught's paper is a criticism of the right kind. He has studied our journals carefully, analyzed their literature closely, and the aim of his paper is to point out its defects and call attention to them. Had he written from the opposite standpoint, the merits of our literature, he would have found considerable genuine wheat among the chaff. Some of it is good as original scientific investigation, much as practical suggestions; and some is classic English, pure in style, and able in composition. Prof. Faught's is just the sort of criticism our literature needs, or

rather our writers need. He knows what he is talking about, and says it plainly and impartially. The more criticism of this kind we have, the better for both writers and readers. It is a lesson very hard for some of us to learn, that what is said or written publicly is then public property, and free for any one who chooses to criticise. Prof. Faught says that a large bulk of the matter in papers is taken from text-books. The converse of this statement is also true, that much of the matter in text-books is taken from the various essays that find their way into our literature from various sources. Had Prof. Faught made his review longer, and specified by name and article those who steal all their ideas and even their words from other writers, he would have done readers, writers, and publishers a still greater favor.

Among the subjects most written about, he mentions, first, "Six-year Molars," a very important subject to the profession and to its patrons. It is not strange that it has been so much written and talked about. Look back over the records of our own Association, and we see an entire disagreement as to the modes of treatment and practice adopted in the care of these teeth. Take any number of our most competent practitioners, submit to them for treatment a few of the children that daily flock to the dental office with diseased six-year molars, and the modes of treatment these practitioners will recommend will be just as contradictory as possible. One class will say, "Extract immediately"; another says, "Save permanently"; another, "Save temporarily." This shows that there is not enough written about the six-year molars. Practitioners should notice and record carefully the modes and results of their practice, and give the profession the benefit of their observations. The result would be more and more said and written about the six-year molars, and more knowledge imparted, till correct treatment would be established, and so generally known and adopted, that Dr. A would not feel sure he was right in pulling out teeth that Dr. B was sure he was right in saving as long as possible. We need more literature, especially of that kind that is an intelligent record of facts and experience. And it is certainly better to hear important matter two or three times than not to hear it at all. Our journals are the great source from which our literature must continue to flow. Text-books for students, but journals for practitioners. It would be better for the profession were more of us to remember that they are for the profession to write for, as well as to read. California is not a

very prolific field for the growth of dental literature. We are practical, and like to use our tongues and hands better than our brains. The profession on this coast knows our views quite well in regard to our professional interests and matters. Our criticisms have not been to pull down or lower, but to stimulate to higher life and attainments. There is not a State in the Union where the members of the profession average higher in manipulative skill and practical ability. But there is room for improvement in many respects. It will not do to say our Association is as good as others. The question is, Can we make it better? All will agree that we can. How? is the question.

First, Throw away our fogyism. Why do we come here? To benefit ourselves and each other. Is what is read and said here worth listening to? If not, then we ought to stay at home. But if our transactions are the opinions and deliberations of dental practitioners of average intelligence, then we ought not to act as if we were ashamed of them, and hide what we do for years, before we let it see the light; but give it to the profession and the world while it has youth and vitality. Dental science and literature pass rapidly through incubation and development to old age. An essay, report, or remark that is well worthy of a place in our published records, when fresh, may, after a few years in our associational mausoleum, be so badly afflicted with old age that it is more fit for cremation than publication. The greatest improvement our Association could make in its literature would be either to publish it in season or not at all. This naturally leads me to again speak of our Pacific Coast Dental Journal, the "Jairus." We held the same views in common with most of you, years before the "Jarius" had an existence. This Association, by its resolution (I believe unanimous resolution), declared itself so much in favor of a journal, that it authorized the executive committee to publish one in which to give its transactions publication. Now, an honorable member of the profession has given us a journal on this coast, and we, as an association, entirely ignore it. Do we, as an association, when the publisher of the "Jairus" says he will publish our minutes in full, and without expense to us, show wisdom in storing them away till they are musty, and then publishing them them once in four or five years, at a cost of four or five hundred dollars? Our avowed object as an association, the very object for which we exist, is to elevate the profession of dentistry. A journal on this coast would help the Association to do this, and

we, as an association, ought to cheerfully extend a fostering hand to our helper, the "Dental Jairus." A few of the most eminent writers in the East have not considered it unworthy of their contributions. Some of these also subscribe for it, because they consider it worthy of their patronage. As a dental journal, it may not be a model. It has so far been far below the standard we hope to see it attain. The way to improve it is for each of us to give it the matured elaborations of our brains and the classic effervescence of our pens. We all know that editors do little to produce the literature of their journals. The thinking, acting men of the profession must do this. California and its journal can be no exception to this rule. It will be just what we make it, a reflection of our professional status and enterprise. If we want to elevate the profession, and let the world around us see that dentistry is not a mere handicraft that any ignoramus can pick up in a few months, we must impress society with the fact that it is the embodiment of some intellectual, scientific, professional, and social culture; and a journal is the best means to do this.

Consequently we say it is the special duty of this Association to aid and foster all agencies that tend to enlighten and elevate the profession, and a journal is certainly one of the most important of these. An association is the natural progenitor and guardian of a journal. An association without a journal is an old maid, shriveled, fogy, and dumb.

Any antagonism that exists between associations and journals is a monstrosity of prejudice and bigotry. They are really united in aim, and should be always in effort. In looking over the dental books that have been published since we last met, we find that some very important additions have been made to our literature. The first is a third edition of "Richardson's Mechanical Dentistry," bringing it up to present date, by adding all the new mechanical devices that have been introduced since the previous edition. We all know too much about this book to require any notice from me.

"Plastics and Plastic Fillings," by J. Foster Flagg. This is a complete embodiment of the new-departure principles and practice. We all know the author as a clear-headed, enthusiastic writer and a conscientious practitioner. We all know his views. They have been a great theme for discussion and criticism in our offices, societies, and journals for the past few years. The work, as a whole, has but little absolutely new in it; but the author has

dug from their graves old practices, old ideas and methods, and filled them with such new life and vigor, that they demand attention. The book is a good one. It was needed, and will do good. It will make the profession more honest and manly. An actual case will tell how it will do this. A few years ago, a practioner of our city, not now a member of this Association, said, when we were talking about amalgam, "I know but little about amalgam. I *never* use any in *my* practice." He put a peculiar emphasis on the "*my*." Professionally, he ranked high, and considered himself among the few on the upper shelf. And we in no way intimate that he was not well worthy of that position; but the fact was, he bought as much *amalgam* as those who used it a great deal. But then, you know it was so unprofessional to use amalgam a few years ago. The new-departure literature has so modified the higher types of the profession, that we can use amalgam now and tell the truth about it, and not loose *caste*. This book was ably reviewed by Prof. Trueman, in April "Cosmos." As is usual in such cases, each one tells much truth; both more than either. The truth any system proclaims will do good, and we need not fear its errors.

"Horses' Teeth," by W. H. Clarke. This book might be called "Horse Dentistry," and its author better deserves the title "Doctor" than many who assume it. I speak to my shame when I say my ignorance of horse dentistry makes my opinion of the book of little value. But those competent to judge say it is thorough and scientific, a credit to the author, and will be a special blessing to *horse-flesh*.

"Mechanical Dentistry in Gold and Vulcanite" is an English work by F. H. Balkwill, L.D.S., M.O.S. We ought to make this gentleman a member of our Association, and then he could add another important title—M.C.S.D.A.—to his name. He is a large fraction of a century behind the times. His work contains information specially adapted to those who know nothing about dentistry.

"Handbuch Der Zahnersatzkunde." This is a German work on mechanical dentistry, mainly from Richardson. One of his reviewers says, "He advocates extracting diseased roots before inserting plates; but makes so many exceptions to this rule, that he leaves them all in."

The book of the year is Prof. Garretson's "System of Oral Surgery." Most of us have had a liberal taste of this in our journals

—know how good it is. It is only just issued. We have not got it yet; but we intend to, and would advise all others to do the same. It is a scientific work of unusual merit, the product of a scientific head, detailing the manipulations that *scientific* hands perform for the alleviation of human suffering.

As an association, we need an entire reformation in methods of publishing the literature we make. Few of us like to spend the time necessary to investigate a subject, and the time to write an essay on it, then read it to a few, and then have it consigned to oblivion for a few years, or forever. We believe what the California State Dental Association does and says and writes is good enough to give to the profession at large, and that giving the productions of our tongues and pens to the public will tend to materially improve our efforts for the Association. Consequently, as one-half of the committee on dental literature, and as one who has the best interests of our Association and the profession on this coast at heart, we recommend that the proceedings be published in the "Jairus," the only dental journal on the Pacific coast.

SECOND DAY.—AFTERNOON SESSION.

The Association was called to order at 2 P. M., President Younger in the chair.

F. W. Bliss of Santa Cruz was regularly admitted to membership.

Report on Dental Pathology and Surgery.

BY A. CORNWALL.

As a member of your committee on dental surgery, I desire to call your attention to a few thoughts suggested by the evidences that are presented in our daily practice, of a lack of sufficient conservatism in our profession, of a readiness to yield to the conclusions of an unfavorable prognosis, and shirk labor and responsibility in doubtful cases, by a resort to the forceps, in the fear of a failure if we try to save, and a belief that the patient will never know that any other treatment was possible—a desire to do "thorough work"—construing that phrase to mean, putting our

patients' mouths in such a condition that they are not likely to require our professional services again soon, by making permanent stoppings where such can assuredly be made, and extracting all that there is much doubt about, including all crownless roots.

I think the best practice tends towards the other extreme.

We should not take counsel of our fears, but rather of our hopes; for if we succeed in making a doubtful tooth useful, we have conferred a lasting benefit on our patient; if we fail, the radical remedy can always be resorted to whenever that failure is fully manifest.

Keep the bones together as long as possible.

Especially try to do this for our *young* patient during that critical creative or growing period, extending to the eighteenth or twentieth year.

That is the time that taxes our best judgment and skill.

After that, nature seems to rest from her labors in extending and expanding the osseous frame and confines her efforts to consolidating and strengthening the structure already reared.

The teeth that have safely stood their trials up to that period, with ordinary care, are not likely to cause much trouble afterward. The most of the cavities that make their appearance at a later date could be found in their incipiency at that time, if a sufficiently critical examination were made. The enamel that at twenty is free from crack or disintegration is likely to remain so to the end.

The reason why the human family suffers from dental caries more than other animals, and civilized man more than his barbarous brother, is to be found in the boiling pot and the grinding stone. They have usurped the function of the teeth, that of preparing our food for digestion, and have relegated those organs to comparative idleness. For want of that severe labor for which they were intended, that forcible churning, as it were, in their sockets, that is produced by masticating hard substances, the nutritive vessels have taken on a flaccid, indolent habit, that has become hereditary, and the teeth are erupted before their mail of enamel is sufficiently solidified to successfully withstand the assaults of the disintegrating forces that surround them, and which are augmented by this same indolent habit.

It is quite the proper thing to raise our children on oat-meal mush. It supplies the nutrition required by the growing teeth, but it requires no masticating.

To my thinking, the raw or roasted grain would better subserve the purpose.

As we are not likely to return to so primitive a diet, we can have no fears of a falling off in the demand for our professional services.

As I have said, it is the management of these organs through their first decade, that demands our greatest care and patience.

If one is unnecessarily lost through us, we have inflicted an injury on our patient that we can never repair. If it is true that nature soon obliterates the evidences of its ever having existed, is it not by checking development, by absorbing and drawing together the adjacent parts, and foreshortening the process, creating a deformity?

Respectable practitioners have held that an unfavorable prognosis justifies the removal of the sixth-year molars. In my judgment, they should not be extracted except under the pressure of a present imperative necessity, such as periosteal inflammation, of such a character as to preclude the hope of relieving it by any less radical treatment.

For if they can be made to do duty comfortably for a month, there is hope for them to last a year. If they can be made to last a year, there is a *probability* that they can be made to last ten years, and an indefinite time longer; for nature is all the time laboring with us for their salvation.

While we are combating the external erosion, the pulp is at work within; for in ordinary health, calcification never stops, and each year the structure becomes thicker and more dense, and less susceptible to the influence of destructive agents, and the *probability* of the continued usefulness of the organ greater.

The recuperative energy sometimes developed in a soft, sensitive, and unpromising denture, excels the hopes of the most sanguine.

It is not rare to see a tooth built up and doing service at 30, that had been condemned by a dentist before 20, and only saved from extraction by the timidity of the patient.

If, through the carelessness of the patient, or our inability to do better, a crown is gone and a pulp devitalized, I believe it is the true business to save the root, and prevent, as long as possible, the anatomical changes that are so sure to follow its loss, and which break up the natural antagonism — set the contiguous

teeth to staggering in their sockets, and are far-reaching in their deleterious consequences.

Extraction means absorption—displacement of the remaining teeth, a shrinking together of the middle of the countenance, a deepening of the lines, and a premature look of age and care, that the victim little suspects the cause of.

Each year of experience and observation increases my respect for the methods of the English dentists, who, though they are not always as neat in their operations as we sometimes are, are less addicted to the use of the forceps, and love to save the contour of the face, by saving the roots where the crowns are gone, and placing their artificial work on the top of them. The extraction of a good firm root without a crown is often as great a loss to the patient as was the breaking away of the crown.

It was preserving perfectly the symmetrical proportions of the parts, and furnishing the very best possible support for a porcelain or metal crown, that would look better, do more service, and give less annoyance than any other kind of work.

There must have been very poor work done in this line many years ago, for there is an unjust and unreasonable prejudice existing against what are called "pivot teeth."

Call it only "setting a porcelain crown," and you evade the power of that prejudice. I believe we should not weary in our efforts to save all we can of the natural person.

I had under examination, but a few days ago, a patient whose teeth at the age of 13 were so badly decayed—so fragile and tender, nearly every one of them being more or less defective—and presenting such a discouraging pathological condition, that the dentist who had charge of the case up to that time (and he was a gentleman of considerable repute in our profession) advised the parents that it was hardly worth while to spend more money on so unpromising a prospect, but to let them go; and as they became too troublesome, have them extracted.

A different course was pursued. They were carefully filled, mostly with plastic stoppings, no attempt made at thorough work, none of the sensitive dentine removed, more than was absolutely necessary in order to get a place that would hold a covering for it.

They were nursed along with almost constant attention for five years, during which time gutta-percha, gold, tin, amalgam and oxychlorides were tried, gold certainly not giving the best results,

operator and patient sometimes becoming nearly discouraged. At the end of that time they began to show a better tone, and at the age of twenty-two the last of them were substantially filled, all but two or three with gold, and they have hardly required any attention since.

Now, at the age of twenty-nine, there are twenty-nine teeth in place, all doing good service, only one of which has had the nerve devitalized, and a good prospect of their remaining comfortable, useful, and ornamental to their possessor until old age.

I presume many of you, gentlemen, are reminded of similar cases in your own practice.

I was much interested, at our session last year, in the history of a case related by our worthy President, Dr. Younger. He successfully treated a case of salivary calculus, where the process around the lower anterior teeth was nearly all destroyed, so that the teeth would hardly keep an upright position.

It illustrated the readiness of nature to second our efforts at restoration, even in old age.

When we look back to the not very remote period when dentistry was but a very minor branch of surgery, whose representative implements were the turnkey and cautery, and trace its rise into a distinct, large, and respectable profession, employing the best efforts of such able and cultivated gentlemen as I see around me to-day, we see the advances it has made in usefulness and dignity have kept even step with our increasing ability to save and restore.

Much has been accomplished, but I believe the most intelligent and skilled are not satisfied with what they have attained. Let us all strive to reach a higher level.

Dr. McLain. Mr. President, the subject of the sixth-year molar cannot be overestimated. I think when the molar shows that it is past redemption, that it should be extracted at an early day, before the twelfth year. And in that case the second molar making its appearance will naturally take its place, otherwise it would have to be removed at a later period of life, and then it will be apt to produce the effect just given.

The President. The only trouble in extracting the sixth-year molar, is that the second molars seldom reach the elevation the sixth-year molars occupy, and in that way the lower jaw is made to protrude, and the lower incisors to press on the inner surfaces of

the upper incisors. I like to retain the first molars even under the worst circumstances, until such time as the second molars are fixed in their position, so that they will keep the jaws in proper relation, and prevent the lower incisors from pressing on the upper. The evil of the extraction of the molars of which so little is thought by so many worthy members is this: that of throwing the lower jaw forward, and either protruding the upper teeth, or cutting through the enamel surface, and rendering the upper incisors sensitive. Another trouble about extracting the lower molars, and a very considerable one, is this: they possess the largest masticating surface of any teeth, and if extracted, you lose the masticating ability of about one-fourth of one side of the jaw.

Dr. Cornwall. In regard to the pressing of the lower incisors on the superior ones to which you refer, and that protruding of the jaw, there is, in fact, a recession of the jaw caused by the extracting. By the fact of these molars being extracted, all of the teeth have been drawn back and the arch has been protected, so that your lower teeth strike more inside. If the others retain their places, they still hold the lower jaw in form.

Odonto-Clasis.

BY W. C. HARDING.

No doubt, gentlemen, you have seen many similar cases; but I thought this case worth presenting to your notice, on account of its complications.

I will state that, previous to the accident named above, this was a case (and a very bad one, at that) of odonto-deformis; the teeth being thrown forward at their points fully five-sixteenths of an inch, and the intermediate space between the points being five-sixteenths of an inch. The space was partly due to prominent deciduous teeth.

The case came to me February 12th, 1881. The little lady was then about nine years of age. The fractures were diagonal, extending from the extreme lateral points to the extreme approximal edges; the lateral points being broken off about one-eighth of an inch, while the break on the approximal sides extended at least one-fourth of an inch up the tooth. The backs of the teeth were literally shattered. The break in front was almost a true

line, having about the same appearance in each tooth, but the left central had lost a much larger piece than the right. The pulp of the left central was exposed; the teeth were sensitive to heat and cold. Percussion could not be thought of, as the teeth could be pushed inward about one-sixteenth of an inch. The right central, though its pulp was not exposed, was hyperæmic, and of a pinkish color throughout.

The fracture was produced by the child falling against a barrel, the teeth coming in contact with an iron hoop. The force of the blow or concussion seemed to be about divided between the teeth.

Treatment.—Counter-irritation was produced by the application of iodine twice upon the gum, above the teeth, in the vicinity of the roots; also by a number of applications of carbolic acid, until the membrane began to slough off. I saw that severe pain would result on applying the rubber dam, if the rubber was permitted to come in contact with the margin of the gum, and obviated the difficulty in the following manner:

With a well-waxed floss silk I formed a clove hitch (two half hitches) upon the tooth to be operated upon, at a little distance from the neck; then passed the long ends through the hole in the dam, and after applying the dam against the clove hitch, tied the long ends of the silk across the tooth, to sustain the rubber in position.

I will here state that the teeth were measured, and calculation made as to where they would articulate when pulled back in place, so as to find out how much shorter they could be made, in order to have the gold present as little surface in front as possible. I then protected the exposed pulp by dotting a paste around the exposure, at a safe distance from the edge; and as one line set, another was made around and upon the former one, continually merging towards the center, until the pulp was covered. I then touched the fractured edges of the dentine with nitric acid, especially at the lateral points, and built up with Worf's cement filling.

The paste for covering the pulp was composed as follows:

℞. Zinci acet. efflor., 1 gr.
Calci sulph. pulv., 2 grs.
Aquæ puræ q. s. to make thin paste.

The rubber dam was removed, and the gums were ordered bathed with the following lotion:

℞. Fld. ext. quercus alb. (Tilden's or Thayer's).
" " " infect. (Squibb's) aa 1 oz.
M. Sig. Apply with a camel's-hair pencil.

The patient was notified to call again in twenty-four hours.

February 13th, the patient took the chair, the dam was applied as before, the bone fillings removed, the pulp capped, as before, except that an additional layer of Worf's cement was placed over the paste, to render it stronger. The enamel edges were then cut uniform, a screw put in, and the teeth were built out as they will be found at present.

There are no retaining points in the tooth. The cutting is cuneiform, so that the gold, coming in contact with the tooth, is shaped like a hollow wedge. After the tooth was restored to shape, except in being one-eighth of an inch shorter, an extra layer was built on the back of the tooth, extending from near the point to the gum. The other tooth was built almost the same in regard to form.

The case was dismissed, the treatment was continued on the gums, and another counter-irritant applied.

It was my intention to use an apparatus to pull the teeth back into position; but on seeing the patient, four months after, the congestion had disappeared, the teeth moved back almost into position; and now, Mr. President, and gentlemen of this convention, with your consent, I will give you all an opportunity to examine the case, *ad libitum.*

Case of Induced Necrosis, and its Restorative Treatment.

BY W. H. ATKINSON, M.D., D.D.S.

A young lady of fifteen went to Germany to attain her education in music. Having occasion for the services of a dentist to arrest decay in the superior lateral incisors, she was subjected to the "couleur de rose" treatment of arsenic. Both roots abscessed, and she was so distressed with pain and swelled face, as to utterly unfit her for the prosecution of her studies. She returned to her home in the State of Pennsylvania, and was there attended by a graduate in dentistry, and the case so mitigated as to enable her to be sent to Wellesley College in the State of Massachusetts.

While there she was attended by a dentist of repute, who was only able to palliate her difficulties. Her condition remained so unsatisfactory as to prevent the continuance of her studies. She returned to her home and to the care of her former dentist.

Through information obtained by him, she came to New York, in the last days of December, 1879, with her mother, and (she

being now sixteen years old) found her way into my office for advice. Upon examination, there was found to be solution and absorption of nearly the entire socket of the right superior lateral incisor, with a discharge from a fistulous opening at the point of the root, high up under the lip, with another fistula by the side of the root next to the central incisor. On the left side more extended solution of the socket of the superior lateral incisor was present, with a multiplicity of fistulous openings through the gum along the entire length of the root on its anterior aspect, with necrosis of the transverse alveolar plates between the lateral and central and the lateral and first bicuspid, against which the lateral impinged. The cuspid remaining high up in the calcigerous cyst in which it was formed, on a line with the wing of the nose, with necrosis or caries of the anterior portion of the bony cyst, in which the tooth was developed.

The necrotic transverse processes, and the dead anterior wall of the cyst, were then removed in the following manner:

The gum was slit entirely up over the tumor, and peeled back with a spud, to where the tissues were healthy, then a cross-cut engine burr was used to rasp away all the dead parts, there being no line of demarkation between the living and dead parts of bone.

An assistant held the soft parts back with a spoon-shaped piece of silver plate, to protect them from injury by the burr.

The loose spiculæ of necrosis were carefully picked away, and the lips of the wound accurately adjusted in the blood without *any* washing, and no other dressing than a bibulous paper pack smeared with tannin and glycerine, laid under the lip over the coaptated margins of the wound. The patient was dismissed, with instructions to keep the mouth sweet by frequently rinsing with a solution of bi-carbonate of soda. This dressing alternating with a solution of salicylic acid in alcohol was repeated for a few days, when the swelling and soreness had completely subsided. At this stage, the loose teeth having been secured by ligatures of silk, an impression was taken upon which to cast a regulating fixture of the Reese Gold Alloy Cast Base, with a platina and iridium bar describing an arc, corresponding to a line upon which the teeth were to stand when in their true position.

A peculiarity of this fixture for regulating, is casting caps over the teeth that are *not* to be removed, allowing a bar to extend over the teeth to be moved without coming in contact with them,

upon which the opposing teeth may occlude in eating, thus avoiding the irritation that would follow, if the teeth to be moved were allowed to be interfered with, at each closure of the jaws.

The fixture was next inserted, and rubber rings, cut from tubing, were slipped on to the bicuspids, incisors, and right superior canine, and attached to the bar by ligatures, in such manner as to draw them in the desired direction.

A portion of the flap of soft tissue over the crown of the left superior cuspid was now removed, to allow the passage of a silk ligature around it, to which to secure a rubber ring for the purpose of bringing it into place; which was effected without destruction of the life of the pulp, notwithstanding the tooth had been drawn down more than two-thirds of its entire length in a little over a month.

At this stage, the teeth being in position, an impression was taken, and a fixture constructed of the Reese metal with platina and iridium clasps, so as to secure a utricular pocket or box, inclosing the territory in which it was desired to have the new socket, attachments, and gums reproduced. With this fixture in the mouth, and a platina wire keeper around all the superior teeth in front, the patient was dismissed in May, thus spending four months in accomplishing the reproduction thus far.

I saw the case last Saturday (May 14th, 1880), with new growth even lower than the normal margins of the festoons of the gums on both sides of the mouth, including the cuspid brought down, and with the exception of the margins, which have no epithelium, being composed alone of embryonal corpuscles (which we used to call proud-flesh), the tissues were normal.

The right superior lateral has a new bony socket so exactly like the original, as to defy detection, and the gum on this side is perfectly normal. The bony socket of the left superior lateral is well reformed, but not yet fully calcified. An entirely new alveolus on the anterior face is well formed on the cuspid.

I shall continue the use of the utricle until the festoons about the cuspid are sufficiently hardened to successfully withstand the contact of food, lips, and brush.

Transplantation.

BY W. J. YOUNGER, M.D.

Since our last meeting, I have had three more cases of transplantation, a report of which I make, in the hope that it may stimulate you and the rest of the profession to revive a custom once in vogue, but fallen, unfortunately, long since into disuse. The causes for this were, no doubt, the clumsy and unscientific manner in which the operations were performed; the difficulty of obtaining suitable teeth at the time they were needed; the carelessness of the operator in selecting the subjects from which they were obtained, thereby transmitting diseases repugnant to the human mind, and the improvement in artificial dentures by which teeth were supplied at less cost, trouble, and pain. But the inconvenience attending the wearing of plates; the infinite superiority of the natural organ in its every aspect — appearance, utility, health, comfort, and permanency — should make it obligatory on our consciences to restore to a mouth, whenever feasible, that which disease or carelessness in the subject has deprived it of — an organ that is accepted by the bleeding socket, and becomes a living portion of that person's anatomy. I say living, because I do not agree with those of our learned brethren who consider that immediately a tooth has lost its pulp that member is dead. So long as the periosteum or pericementum has the ability to retain or to make an attachment with its environment, the root is still alive. The operations I have to report are, a left superior lateral, taken from a lady of 41, and inserted into the mouth of another of 38 years. This lady had worn a pivot tooth from the time she was 15. The root had for many years been badly abscessed. A large portion of the labial plate of the alveolus had been destroyed in the inflammatory action consequent on the bursting out of pus. Large cicatrices are still plainly visible on the gum. The operation was performed on the 20th of last January. The tooth is now, and has been for some time, quite firm, and is performing its functions in its new home as if it had never known another; and with the exception of the cicatrices, and the absence of a portion of the gum and alveolar process, there is no trace of disease. Two of our associates have already seen this case, and the lady has kindly consented, in the interests of science, to allow any member of this Association to also examine

the tooth. The other case is a right superior bicuspid, extracted from the crowded arch of a young lady of 16, and inserted into the alveolus of a right inferior bicuspid of another young lady of the same age. This case I was not sanguine about, in consequence of the root being much larger than the socket, and necessitating the mutilation of the whole of the lingual and buccal surfaces of the root, not only thereby depriving these portions of the necessary periosteum, but of the cementum and portion of the dentine. Besides, considerable force had to be used, even then, in its insertion. Nevertheless, the tooth is firm in its socket, and the operation seems in every way a success. This operation was performed on the 21st of last February. The other case was of a canine root taken from a lady of 36 and inserted into the place of a left superior central incisor in another of 42 years. The intention was to put an artificial crown on the root. This would also have been successful but for the extraordinary and unwarrantable interference of a member of our profession, to whom was referred the case for pivoting, and who, instead, extracted the root. The method I pursue in these operations is to drill, immediately after extracting, through the crown (in the prolongation of the canal) into the pulp, and remove it; wash the root and cleanse the socket of clots, and wait until the bleeding has in a measure subsided. If the root has been shattered, I satisfy myself that not the slightest spicula remains to cause trouble. Rinse the socket with slightly carbolized water, into which the root is also dipped; insert the root, and retain it by silk ligatures fastened to the adjoining teeth, the canal to be left open, or simply having a slight pledget of cotton saturated with carbolic acid, for the antiseptic effect of the preparation, but not tight enough to prevent the passage of any discharge from the end of the socket. There is a gentleman who lost a lateral incisor in consequence of tartar having denuded the root of all its pericementum. The root was immediately cleansed of all foreign matter, the apex of the crown filled with gold, and the root smoothed with file and burnisher. The tooth was then reinstated, and retained in its position by ligatures, there to await the time when opportunity would put in our hands a suitable root to take its place. When this fortunate event happens, I will cut off the crown from the old root and pivot it on the new, and proceed as in other cases of transplantation. In this case, however, I anticipate I shall have to deepen the socket, either by drilling into the bone or by pressure with the old root, to in-

duce absorption, and thus extend the cavity. The great difficulty to be encountered is the lack of material at the time it is needed. For this reason you should never waste a good tooth nor even a root; and I would suggest that you keep a cock, and when circumstances require the extraction of a serviceable tooth or root, prepare it as I have recommended, with this addition, that you plug the canal with gutta-percha, carefully cleanse the crown, coat it with some colorless varnish, and then plant it deep enough to cover the pericemental margin in the comb of the cock. There the periosteal life will be maintained until such time as it will be again required for service in the human mouth.

Dr. Dutch. This matter of transplanting teeth, or replanting them, was passed on a great many years ago. Unfortunately, the books treating upon this have gone out of print. The practice was very successful, but only for a time. And the reason they did abandon it was that it led to the transmission of disease. They found it impossible to transplant these teeth without danger. They would remain in their places one, two, or three years, and then some disease would break out.

The President. I question if that thing could be so.

Dr. Dutch. I understand you question it, but at the same time one person can read one thing one way, and another another. I am not advocating a theory, I am simply stating what I read. I do not advance any theory at all. I wish to state that it is a misfortune I cannot produce the evidence whereupon I base that assertion. Other persons have read the same things.

Dr. Goddard. I have had no experience in transplantation, but I have had a case of replantation, that was quite interesting to me. I was called on to see a patient, a little boy nine years of age, who was performing on the trapeze, and one of the ropes broke. He fell, and the result of the fall was that both superior centrals were knocked out of their sockets. When I saw the patient, they were then out of the sockets and perfectly dry. The teeth were not fractured at all, and the sockets seemed to have sustained no fracture. I took the teeth to my office, and after rinsing them with dilute carbolic acid, removed the pulps and filled the canals. I replaced them, put over them a cap of gutta-percha, and secured them by ligature. The teeth, when replaced, had been out about five hours. Three hours of that time they had been perfectly dry. I kept this ligature upon them till they were pretty firm. The operation was performed six months ago.

About three months ago the teeth were filled with gold. I saw the patient last Saturday, and the teeth were as firm and as good as any. I would ask how long a tooth can be out of the mouth and the pericementum still retain its vitality.

The President. In the unfortunate case I have been speaking of the root was out three hours. The other tooth was inserted within an hour and a half. If you would like to see the cases of transplantation, and assure yourselves of the success of the method, any time you want to inspect them, these ladies have consented to exhibit their mouths.

Dr. Goddard. I would like to ask whether the root is kept moist or not?

The President. I think it is best to keep it moist. I do not like to have it get too dry. I kept it in tepid water slightly carbolized. As far as transmission of disease is concerned, that is a remote possibility, liable to arise only in a case of syphilis, that will induce it undoubtedly, but it is a dentist's duty to inform himself of the condition of the patient from whom he extracts the root.

Dr. Rabe. In speaking about replantation, I have had some experience. Dr. Goddard asks how long a tooth can be out and still remain vital. Even if the tooth should get dry it can be replanted with success. I have a case in Oakland. I had filled a tooth, and through a mistake, because of prostration, I had to extract it. I laid it on the shelf over night, and the next morning the lady came back, and I discovered the true cause of this thing, it was a dead central incisor. I got so angry about it, after being compelled to extract the tooth, that I insisted on replacing it. Very fortunately, she was a lady who prided herself on her looks, and she consented to it. The pain was so great, that when she left I put some cotton with aconite and iodine in the socket. I found that in the morning, when I went to fix the tooth, that I had successfully replanted it. I fixed this the same way by filling the canal and pulp-chamber with oxychloride of zinc, shortening the root and filling it with gold, being careful all the time to keep the root as clean as I could. After I got this done, I laid it in a solution of dilute carbolic acid, and when the lady came back, thirty hours afterwards, to have it replaced, I did so, and we had to fight everything for about three weeks, and she has the tooth yet; this was done three years ago. There is a dentist, I cannot recall his name, but I am very familar with his writings, and he has done a large business in transplantation.

Dr. Dutch. Transplantation or replantation?

Dr. Robinson. Transplantation; he uses that term. Some of them may have been replanted, but most of them were cases of transplantation. He separates them, and his practice has been quite extensive, and now he has got so enthusiastic on this point that he will take such teeth as are likely to be needed, and after they get thoroughly dry he puts them back again. He mentions one case of six weeks' standing that is astonishing to me, though I do not want to impeach the man's veracity. I believe, of course, there is an acute disease which may be transmitted by transplantation, but I do not believe hereditary diseases can be transmitted in that way. I do not believe there is any case on record where a hereditary disease, even syphilis, has been transmitted in that way.

Dr. Griswold. While this subject of transplantation and replantation is being discussed, I would like to make a statement of a case of replacement of the crown of a tooth which had been broken off. Some years ago a friend of mine, in a sparring exhibition, had his tooth broken off, and he came running up to my office in great excitement, and wanted me to do something. Without stopping to think, I immediately extracted the pulp and sealed the end of the root. I then drilled a hole in the broken crown, and replaced it in its natural position by means of a pivot. A year after that he called on me, and I saw the tooth, and it seemed to be as good a tooth as any he had. About that time he removed to Pittsburg, and some years after that he wrote to me that the tooth was as good as any he had in his head.

SECOND DAY.—EVENING SESSION.

Order was called at 8 P. M., Dr. Younger presiding.

The minutes of afternoon session were read and approved.

The special committee appointed to consider the matter contained in Dr. Cogswell's letters made the following report:

To Dr. H. D. Cogswell:

DEAR SIR — Your communications were duly received and considered by us.

In reply, we, as an organization representing to some extent the dental profession of this coast, wish to say that we gratefully appreciate the interest you have taken in the cause of dental education. We, more fully than any others, realize how much the dental profession on this coast needs a dental college; and we are heartily in sympathy with all efforts that tend to give us one.

From the terms of your communications to us, as an association, it seems that you are laboring under a misapprehension regarding the present attitude of the State Dental Association toward the institution bearing your name.

In your communications it is intimated that our society has not manifested proper interest in perfecting the dental college. As such is not the case, and in order that you and all others may know the real position we occupy in the matter, we submit a short review of our connection therewith, believing that the facts will set the matter right, and justify the position in which we find ourselves.

After the donation had been made by you, it was suggested by Dr. Le Conte, President of the State University, that inasmuch as the dentists on this coast were directly interested in the establishment of a dental college, it would better insure the successful issue of the scheme if the co-operation of the State organization could be secured. It was also suggested that the State association nominate persons to fill the special chairs. This suggestion was informal. The Committee on Dental College, then in existence, met and selected the names of three persons, as in the opinion of the committee were duly qualified. In answer to this communication, a letter was received from Profesor Le Conte, requesting that several names be submitted, from which to make selection. Thereupon the college committee again met and made six additional nominations. To this communication no reply has yet been received.

This is all we know about the matter. While we earnestly desire to do all in our power to put the college into successful operation, we can but feel that the failure to perfect it does not rest with us. We are now, as we ever have been, ready to co-operate with the Regents of the State University, if allowed to do so.

This statement will, we trust, fully explain our apparent want of interest in the matter.

In regard to the plan of forming a joint-stock company, we

have only to say, that, not being incorporated under the laws of this State, we cannot purchase or hold property, and we cannot act for members of this Association as individuals.

We regret the failure of the completion of the negotiations entered into, but do not consider that we have failed to exert every effort to bring the college into full maturity.

As we understand it, the Board of Regents of the State University are the sole arbiters and custodians of your donation, and they are the only persons who have any legal or advisory power in the premises, except such as was informally conceded to us by Professor Le Conte; and now, however willing or anxious this Association might be to take steps to help give the Cogswell Dental College practical existence, we find ourselves, as an association, absolutely without power to do anything more than we have already done.

We, as an association and as individuals, are very anxious to have a dental college, and to help any effort to give us one, and we would gladly co-operate with the Board of Regents, were they to give us an opportunity, or in any way let us know that they wanted our co-operation or advice in the matter.

As it now stands, the Board of Regents have the entire control of the whole college matter, and they alone are authorized to take any action to put your enterprise into practical existence; and no one should expect us to do anything until we are officially given an opportunity.

Whenever the Board of Regents ask our co-operation or assistance in any way, we will gladly do all in our power to aid the cause of dental education.

Respectfully submitted.

W. H. ROBINSON,
S. E. KNOWLES,
C. L. GODDARD,
Committee.

On motion of Dr. Asay, the report was adopted, and the Secretary was instructed to transmit a copy to Dr. Cogswell.

The Cause and Prevention of Dental Caries.

BY W. A. KNOWLES, M.D., D.D.S.

Dental caries is an inflammation of dentine, terminating in death and disintegration of a part or whole of a tooth.

Caries is generally occasioned by the action of an irritant. It first attacks the organic portion of the tooth, inflammation and death ensue, and this is followed by disintegration of the inorganic portion.

Before decalcification of tooth tissue can occur, it is absolutely necessary that death of the organic portion should previously have taken place. Vitality resists caries, and in proportion to the life force will this resistance be. Vital force is subject to physiological laws; but as soon as death ensues, chemical laws take charge of the tissue. We find that in a dead tooth, offering no such resistance, disintegration takes place with greater rapidity than in a live tooth under the same conditions.

The first change occurring in dentine after the inception of inflammation is that the contents of the dentinal tubes in the immediate neighborhood of the lesion begin to undergo calcification. This is the resistance which the vital force offers.

It would impede the progress of caries; for the greater the density, the slower is the rate of disintegration. The calcified contents, in common with the other portions, undergo decalcification as the carious portion is extended.

Portions of dentine which have been undermined, and, by mechanical forces acting upon them, broken away, may be found in the cavity.

Alkalies may occasionally be the exciting cause of caries, as they have strong affinities for some of the constituents of the organic portions, and the same may be said of concentrated acids; but the removal of the inorganic portion is always accomplished by the action of acids.

Practically, the enamel is inorganic, still it contains about five per cent. of organic matter; and where this is found, we will find vital force.

Destructive agents act more rapidly on the enamel than on the dentine, on account of a lesser degree of vitality. Caries attacks the cementum more rapidly than the dentine, but not so rapidly

as the enamel. Caries is more common in women than in men. During pregnancy and lactation it is especially active.

Among the exciting causes of caries are defects in the enamel between the cusps, the line of union always being more or less imperfect, roughness of surface, the action of mineral or vegetable acids, the sucking-bag given to children, irregularities, crowded conditions of the dental arch, artificial dentures, and eructation or emesis of acid fluids.

Among constitutional causes are scrofula, syphilis, and rachitis.

Chemical action is always the immediate cause.

Constitutional causes are concerned in producing badly organized dentures, and in producing agents acting deleteriously on the teeth. Among the different occupations most liable to produce caries, are those of dealers in pickles, cooks, and confectioners. The sugar combines with the gingival mucus, and, by fermentation, forms lactic or butyric acid, or both. Fur dealers are apt to have carious teeth, on account of the fumes of nitric acid, which is employed in coloring and cleansing furs.

In scrofula the saliva is very thick and viscid, and is tenaciously held against the necks of the teeth, acting deleteriously.

Medicinal preparations, occasionally used, which contain acids do not necessarily cause caries, but may predispose to it. Caries is caused by an agent which, though it acts slowly, is acting constantly. It may be an excretion, a secretion, formed in the mouth, or may be introduced from without, and it acts as fast as formed.

Dental caries is divisible into three general classes: (1) Superficial, or attacking only the enamel; (2) Penetrating, or attacking the dentine; and (3) that which involves the dental pulp. The color of caries varies from white to brown or black.

White decay is most rapid, and black slowest. In the white form, all portions, both organic and inorganic, are alike acted upon. In the brown form, the inorganic parts form soluble compounds with the destructive agents, but the matrix remains untouched. In the black form the salts formed are mainly insoluble, and therefore retard the progress of caries.

In chemical abrasion, soluble compounds are formed with both the organic and inorganic portions, and total removal of tooth structure takes place as far as the disease extends.

A single agent generally produces each distinct form of caries; but we may find several forms in the same mouth, or we may find a mixture of several forms in the same tooth.

Physical characteristics of caries depend on structure; but are somewhat modified by the agent producing the caries.

Chemical characteristics depend on the character of the agent. Teeth are similar in chemical composition, but not in physical structure. Poorly organized teeth offer less resistance to caries, but the resulting compounds are always the same.

Experiments on teeth out of the mouth cannot be relied upon, because we can never get the resistance which vitality offers in the mouth. Teeth are more thoroughly decalcified outside of the mouth than they could possibly otherwise be. If we burn the carious portion, we always find inorganic matter in the ash.

Teeth become carious in pairs, not from any contagion, but merely that they are the same in structure, are erupted at the same time, and are subjected to the same influences and changes.

Rocky enamel denotes a malnutrition at some portion of the time of its formation. It is found in connection with dentine, which is imperfectly formed. We find this condition in corresponding teeth on opposite sides of the jaw; and if it should be found on other teeth, it would not be at the same point, but at a point which would correspond to the development of these teeth at the time when the others were attacked.

Unless the dentine is penetrated, however, it may not be liable to caries.

The acidity of carious dentine is said to be due to the presence of superphosphate of lime. The superphosphate is formed from the phosphate by the replacement of a molecule of calcium by basic water. This changes the phosphate, which is neutral and insoluble, into a salt, which is acid and soluble. In order, however, to have removed the molecule of lime, it was necessary that an acid from an external source should previously have acted upon it. The following free acids are found in the saliva: acetic, uric, oxalic, and muriatic.

Muriatic acid is one of the most common. It is formed in the mouth by the decomposition of the chloride of sodium when an excess of salted food is eaten, or it may be formed when there is excessive inflammation of mucus membrane in the oral cavity.

Phosphate of lime is very soluble in this acid, and hence rapid destruction of inorganic matter follows its exhibition.

Galvanic action also results in its formation. Chlorate of potash, normally found in mucus, by decomposition, may produce muriatic acid.

The acids, produced by fermentation of organic matter entangled by the teeth, furnish the main portion of the destructive agent.

Mucus is ordinarily acid, and saliva alkaline, and in normal conditions one neutralizes the other.

The secretion of saliva is partially checked during fevers, and the acid mucus may then work great destruction.

Acid mucus is particularly abundant during childhood and pregnancy.

Acids first attack the enamel, and roughen or erode its surface. This affords lodgment to particles of decomposing materials, which in turn decompose the tissue underneath. The character of caries depends somewhat upon the strength of the attacking acid. If diluted, it attacks primarily those portions for which it has the greatest affinity; if concentrated, it may attack all parts similarly.

Enamel protects dentine by means of its great density.

Leptothryx buccalis is a vegetable growth found in carious dentine, as is also often found the *oidium albicans*.

Leptothryx has the power of penetrating dental tissue, but not before the tissue has been decalcified. It is never met with in sound dentine, but is often met with in salivary calculus. Salter believes it is found in all cases of caries, and may live at the expense of the tissue.

Proximal caries occurs just above the point of contact of the teeth.

The teeth and the cornea of the eye, both being developed from skin, are liable to disease at the same time, and thus we may find keratitis and corneal opacities in conjunction with imperfectly formed dentures.

The first molars are so prone to decay, because for about six years they occupy a position similar to that of the *dens sapientiæ* in adult life. Being situated so far back, they are but imperfectly cleansed. A reason why caries is allowed to proceed so rapidly is because parents often believe them to belong to the temporary set.

Frequently as long as two years will elapse before complete eruption of the *dens sapientiæ*. During this time the gum rests upon the tooth, entangles particles of decomposing food, generates acids, and decomposition of structure results. The lower incisors are less liable to caries, because they are constantly bathed in saliva.

Salter reports a curious case:

A molar tooth was found to have three short horizontal canals piercing the neck of the tooth. On microscopic examination, the tissue in the immediate neighborhood was found to be cancellated. It extended into both crown and root, and was circumscribed. It was, therefore, true osseous structure.

The prevention of caries is in tonic constitutional treatment, thorough mastication of food, cleanliness, and the use of antacids.

The file is often beneficial in separating teeth, and the opening should be wider at the gums and larger on the lingual surfaces.

In a crowded arch, extraction of a bicuspid or molar on either side may be beneficial in spacing the teeth. To insure perfect cleanliness, floss threads should be used for passing between the teeth.

Soluble dentifrices are desirable, and should contain no gritty particles. Charcoal should never be used. Should there be a tendency to excessive acid secretion at the necks of the teeth, the mouth should be rinsed daily three or four times with *aqua calcis*, and a pinch of chalk or bicarbonate of soda rubbed occasionally on the gums is very useful.

Superficial caries may be removed by the disk or file; and if the surface is left self-cleansing, caries may be arrested.

In penetrating caries the remedy is in mechanically replacing the lost portion by some of the various preparations employed.

Dr. J. A. W. Lundborg. I would like to ask Dr. Knowles what treatment he would recommend.

Dr. W. A. Knowles. The use of *aqua calcis;* that is, lime-water, or precipitated chalk; or the bi-carbonate of soda.

The President. During the past month a lady called upon me who had suffered almost constant neuralgia for two or three years; and who located her pain sometimes in a tooth. It seemed to start from there, and then pass up her head, and then over the eye and along the temple.

The tooth had been filled, and was in excellent condition; the filling perfectly sound. There was nothing to show that the tooth was in an abnormal condition. She had been treated for a long time for neuralgia.

She came to me, and said: "Doctor, I think I have injured a tooth in front of that"; so I put my finger in to feel, and as I touched it I touched the front tooth, and she said: "What a re-

lief that is." As soon as my finger touched, not the broken tooth, but the tooth that contained this large filling, the neuralgia seemed to pass away. So after trying that a few times, on different days, I drilled into the pulp, and found it alive. I destroyed the pulp; and that night she had very little neuralgia. The pulp has been removed, and she has not had an attack of neuralgia since.

Dr. W. A. Knowles. I think, in a great number of cases of severe neuralgia, that we find the wisdom teeth are the offending members.

I have two cases in mind, one of a lady who came with the idea of losing all of her teeth. She had had so much trouble with them that she thought she would have them all out. The teeth were so exceedingly tender that she could bear no examination; so that I could not tell much about it, except that I discovered that two of the wisdom teeth were carious. I think, also, that there were only the roots remaining of a lower first molar. She was put under the influence of chloroform by a physician, and the teeth were extracted. After extraction I passed a large instrument to the end of the root. The pulp had been completely exposed.

I have another case in mind, a lower left wisdom tooth, which was apparently perfect and sound, although the patient had complained of pain in that vicinity. I believe there was a small cavity in the crown of the tooth; but not sufficient to give rise to any of the symptoms complained of. Applying the rubber dam, I found that the tooth was decayed distally; that the gum had extended up the tooth, entirely hiding the cavity; and that there was a very large cavity, exposing the pulp. The cavity extended so deeply that it was deemed injudicious to save the tooth. She had lost all the remaining molars on that and the other side. The tooth was extracted, and there was no further trouble.

THIRD DAY.—MORNING SESSION.

The Association was called to order at 10 A. M., Dr. Younger presiding.

Report of special committee on dental legislation:

Mr. President, and Gentlemen of the California State Dental Association:

Your committee on dental legislation appointed at the last session beg leave to make the following report:

Some considerable time and trouble were expended by your committee in drafting a bill which might meet the requirements, and getting it in readiness previous to the assembling of the last Legislature; and it was the fixed purpose to crowd the bill through if possible. But it was ascertained, as all well know, that a great deal more work was placed on the Legislature than could possibly be disposed of during one short term, however diligently it might have been dispatched.

This, together with the assurance on the part of some of the leading members of the Legislature, that there was hardly a chance of success, rendered it inadvisable to present a bill only to subject it, not alone to present, but perhaps to ultimate, defeat, should it lay over to a future session of the Legislature.

Your committee earnestly desire that a suitable law should be enacted, and in withholding any measure in the face of almost certain defeat, believe that they have acted most wisely.

All of which is respectfully submitted.

WM. DUTCH,
J. L. ASAY,
J. S. CRAWFORD,
H. H. PIERSON,
J. J. BIRGE.

On motion, the report was accepted and the committee discharged.

Report of the Executive Committee:

SAN FRANCISCO, June 14th, 1881.

Mr. President, and Members of the California State Dental Association:

In pursuance of the instructions of the Association and the laws governing the same, the trial committee, consisting of Drs. F. A. Brewer, W. A. Knowles, H. E. Knox, R. Cutlar, and C. L. Goddard, who were unable to complete the work intrusted to them while the Association was in session, continued their labors up to August 6th, at which time they agreed upon a report, which was duly placed in the hands of the Executive Committee.

By order of the President, a meeting was held August 9th, 1880. Members present were Drs. Younger, Dutch, Goddard, and Goe. The following communication from the trial committee was read:

SAN FRANCISCO, August 6th, 1881.

To the Executive Committee of the California State Dental Association:

GENTLEMEN: Your committee appointed to investigate the charge against B. L. Rhein, D.D.S., for violation of the Code of Ethics of this Association, has done so; and found him guilty of said charge, and would recommend that he be suspended from membership of the Association for the period of one fiscal year.

(Signed)

F. A. BREWER,
W. A. KNOWLES,
H. E. KNOX,
R. CUTLAR,
C. L. GODDARD.

By vote of the Executive Committee, the report was adopted, and Dr. Rhein was notified of said action.

Respectfully,

S. E. GOE, *Sec. Ex. Com.*

Dr. Robinson, seconded by Dr. A. Warner, submitted the following resolution, which was adopted:

Resolved, That the California State Dental Association, now in session, sends fraternal greeting to the Wisconsin State Dental Association. By an informal vote of this Association we find that all our members, with one exception, have received circulars from the so-called Morrison, Wisconsin, Dental College, offering a big diploma and "D.D.S." for the sum of $12, C. O. D.

We know that the dental profession of your State is more disgusted than we of this State with such diploma mills; and we send this to express our good-will toward you, and to urge you as an association to use your utmost endeavors to suppress and publish all bogus dental colleges in your State.

Dr. A. Warner, on behalf of the San Francisco Dental Association, extend to the California State Dental Association an invitation to a dinner in the Palace Hotel, at 8 o'clock Thursday evening.

On motion of Dr. Dutch, the invitation was accepted with thanks.

Report of Committee on Dental Literature and Education.

BY W. H. ROBINSON.

This same duty fell on us last year. We then gave our honest convictions on this matter quite fully. It would be as well to reread our report, as to repeat what we then said; and if we repeat nothing of what we then said, we might as well stop now. During the past year we have tried to gather up all the new views and ideas that have come within our reach; but, as we said last year, dental education has been so much talked about, written about, discussed, and reported on, that but little new can be said.

A subject that is before every one of our dental societies at every meeting, all over the world, must be regarded as important; and while nothing new is being said or written, the much that has been written and said hundreds of times, is being sifted of its chaff, and is being put into better practical shape.

Education is a beautiful theme; a grand old theme. It has

glories to extol and praises to be sung. The bards of antiquity honored this theme with the grandest inspirations of their genius, and the richest strains of their classic muses. The old philosophers worshiped at this shrine, and on this altar laid the noblest sacrifices that ever blessed the world — their talents and their lives. "Get wisdom, and with all thy getting, get understanding," is an inspiration so deeply breathed into human nature that it is doubly divine.

The sages of antiquity who first drank at wisdom's fountain did not hoard their treasures, like the getters of gold, but gave fully and freely to the great stream of light and knowledge that grows broader and deeper every year, and forever flows on, lighting and purifying the world.

In the ages past, the educated formed the highest casts of society. In later days, those who ranked in the learned professions were considered worthy of special regard. As the world becomes wiser, the tendency has been to ignore arbitrary distinctions, and respect a man for his actual worth, not because a technical schooling process gave him a title and legal standing in a so-called learned profession.

The respect and positions conceded to those in the learned professions have tended to make those who were too lazy to do the hard work necessary to honestly earn these positions, take a short cut — a wonderful, scientific leap. Buchanan says he sold about four thousand diplomas, most of them in Europe. Think of it! Four thousand ignoramuses gave one or two hundred dollars each for bogus diplomas that added to their names bogus M. D.'s. Many of those who now hear me, have received a wonderful offer from the Wisconsin Dental College, of which Dr. George Morrison is president—nothing less than a beautifully engraved diploma, 17 x 24 inches, with your name hand-printed in beautiful style, and a D. D. S., C. O. D., all for $12. Is that not as cheap as "full sets of teeth, without plates or pain, for $10, and largest cavities filled with gold for two dollars?"

These bogus diplomas have a philosophy. They show us that men like to be considered wise, that they like titles that will make the world think they are wise.

The bogus diploma mills show us another fact, one that strikes a blow of terrible force at our dental and medical colleges, and force upon us this question, "Is there any real difference between those who have the bogus and those who have the genuine diplo-

mas?" We may laugh at such a question, and call it absurd; but if we go to actual cases for answers, we will meet some facts that are hard to gainsay. Take the most ignorant specimen of humanity that ever bought M.D. from the Buchanan concern, and I will guarantee that there can be found men with genuine legal M.D.'s from legal medical colleges that are just as ignorant. And beyond question, some in our profession with a $12 C. O. D. D.D.S. from Delevan will be just as good morally, scientifically, and professionally as some who bear a genuine D.D.S. Is not this humiliating? Yet it teaches us and the schools a useful lesson. That our professional schools must find surer and higher standards of scholarship to guide them. They must make their education so genuine and thorough that the world will see a difference, *wide and plain*, between the man who has earned his diploma by a course of study at a professional school and the man who buys one for $12, C. O. D. Medical and dental education run so near together that it is difficult to speak of them separately. As a rule, our dental schools are connected with medical schools; much of the instruction is common, and imparted by the same professors.

We have one decided advantage over our medical *cousins* (some of them do not admit a relationship as close as brother). We never have and are not likely to split into distinctive schools, such as Allopathic, Homeopathic, Hydropathic, Eclectic, etc. The views held by dentists on these systems of medicine create no divisions in our ranks. Even the new departure and accepted creeds jog along together, and rather enjoy the family quarrel that the new departure produced. Consequently our schools all belong to one system, and are not under the same temptation to shorten their course of study to gain converts to any special system or creed. But then our schools have influences to contend with, perhaps equally as pernicious. Several thousand every year, after a course as office boys for from six months to one or two years, come into the profession as full-fledged dentists. And a few thousand more, whose age prevents them from being office boys, take a short independent course. Many of them spend a few months in a dental office, and as they judge of dentistry by the attainments of their preceptor, it happens the less he knows the shorter time it takes for them to reach the same professional status, and go forth as office graduates. Some of the more heroic simply write "Dr." before their names and "Dentist"

after them, hoist their banners, and enter professional life under full sail.

If we look around and see the grand advancement of the world in the arts and sciences, in mechanics, literature, and intelligence, we may wonder that the standard of scholarship is so low in the dental and medical professions; but we wonder less, if we look at the influences that induce ignorant pretenders to enter these professions, and the easy paths that invite all who choose to enter professional life. But in spite of all these adversities, the tendency is in the right direction, and to higher attainments in both general and special culture.

A review of what has been said and done in matters of dental education during the past year, shows us that the general ideas of the profession are crystallizing into definite form. Their efforts are taking definite shape. We are making progress—true progress. All our professional schools will soon have clear and well-settled standards of scholarship, both as to matriculates and graduates. No doubt most of us have noted the position of the American Dental Association in educational matters. In 1879 they declared, by resolutions, and reaffirmed those positions at their last meeting:

1. That colleges shall not be entitled to representation in that Association, unless *they* require of all matriculates a good English education, to be proven by actual examination.

2. That none shall be allowed to graduate except those who attend two full courses of lectures, or commenced the practice of dentistry previous to the year 1875, and then attended one course. Most of the colleges have adopted these standards. Some even go beyond them. Our personal views may not amount to much, when opposed to the positions defined by the resolutions of the American Dental Association. Their standards are none too high; but they are behind the age in prescribing the mode in which men shall reach these standards. Actual acquirements, no matter how, where, or when obtained, are what our colleges should require. Suppose a man presents himself at one of our college examinations for graduation, and that his literary and professional attainments are equal to the best in the class, and the faculty say: "We cannot allow you to graduate. You know all we teach in our course, but you must go through our routine, waste two years, and incur considerable expense, before we can honor you." How absurd! Real merit is aggressive and independent. It breaks new paths, and outstrips routine methods. Schools receive more

honor than they give in recognizing true merit and genuine attainments. Some of the most contemptible quacks in California are graduates of medical and dental colleges; and I simply state what we all know to be true, when I say that some of our untitled professional brothers are the full peers of any in our profession in social, scientific, and professional culture.

Dental education cannot advance alone. The various factors and conditions that in the aggregate we call the dental profession must advance with it.

The day is fast approaching, we think its light already shines around us, when professional schools will not pretend to lecture ignorant boys into scientific, professional men, in from eight to twelve months; but, on the contrary, will say: "Our doors are only open to those already educated, who come to us with brains trained to think accurately, and minds so disciplined by close study that they can comprehend and appropriate the scientific and professional instruction we impart." We think no one will question the assertion, when we say the present position of the profession and its colleges in relation to education, in general and specific, is higher, better defined, and much nearer a practically correct standard than ever before.

A consideration of the matter of dental education, naturally leads to ask what is being done on our coast in this matter. The Cogswell College comes before us. This matter has been considerably discussed during the past year. We think it is proper that this matter should be brought before the Association, and that it should take some action on it. I bring it to your notice, as the project on which now seems to hang our educational interests. I shall try to do it plainly and impartially.

About two years ago Dr. H. D. Cogswell deeded in trust to the Regents of the California State University certain property in this city as a permanent endowment for a dental college. The endowment is the upper story of a building on Clark and Front Streets, which gives the dentists the rooms, or local habitation, for a college in perpetuity, free of rent or taxes. The deed also stipulates that when the rents of other parts of the building supply the means, the building shall be improved without cost to the dental college endowment. There are also some conditions about free scholarships and a loan fund for students and free dental operations, but these are contingencies of the future. The cash value of Dr. Cogswell's donations is estimated from $15,000

to $20,000. We are all agreed that we need a dental college on this coast. We all want the best one it is possible for us to have. Could we have it to suit us, we would have it the model college of the world, an endowment of a million or so, a fine building, with its arrangements and furnishing, the nearest approach to perfection. But as we cannot have this, we ought to take that within our reach, and make the best of it.

I know of no dental college in the United States that has ever had as generous an endowment to commence with as *our Cogswell College.* It is admitted by all, that from $3,000 to $5,000 in addition to Dr. Cogswell's endowment would put it into immediate practical operation. If any one looks over our professional matters on this coast, he need be no prophet to tell that if we do not unitedly and earnestly avail ourselves of Dr. Cogswell's generous offer, there will be no dental college on this coast during the present century, unless, through some unforseen manifestation of divine mercy or human generosity.

It is the plain duty, and certainly ought to be a pleasant duty, for the profession to gratefully receive Dr. Cogswell's generous donation, and heartily thank him for it. Dr. Cogswell's generosity merits the gratitude of the entire profession. We believe there is intelligence and liberality enough among the dentists of California to so second and uphold Dr. Cogswell's enterprise, that it might soon take rank among the best colleges in the land. We know this Association has no legal authority over, or relation to, the Cogswell Dental College. But we have an interest in it. Practically, it belongs to us. We have advisory power, and we as an association can so present this college matter to the profession, as to interest nearly all in an effort to put it in successful operation. The Regents of the State University are the best custodians of the property. Its affiliation with the University gives it prestige and position. A business-like effort on our part, directed by ordinary sagacity and energy, will give us a college in practical operation.

Dr. Cogswell has done his part, and tells us plainly that unless some proper effort is soon made to give the college vitality, he will ask permission of the Regents to change the endowment to some other purpose. And if he does this, we may bid a long and last farewell to our prospects for a dental college on our coast.

THIRD DAY.—AFTERNOON SESSION.

Order was called at 2 P. M., President Younger in the chair.

Dr. Alison Van Denburgh was regularly admitted to membership.

Dr. Robinson submitted the following resolution, which was adopted:

Resolved, That we now, as the California State Dental Association, declare ourselves in favor of becoming a corporate body; and that we immediately take the necessary legal steps to incorporate under the laws of the State of California.

Operative Dentistry.

BY C. W. RICHARDS.

At the urgent request of our President, I have concluded to prepare a few notes on operative dentistry as practiced in our office. The subject of operative dentistry is very important, and many articles have been written thereon.

Many cavities in the teeth are difficult to operate on, and much skill and judgment are required in filling them.

The most difficult, in my opinion, are the proximal cavities in the front teeth, which should be cut and filled from the palatine surfaces; next to them, the posterior cavities in the molars, in the filling of which the greatest care should be used.

After a practical experience of several years, I find that, in order to have a thoroughly condensed filling, it is necessary to use as smooth a point as possible. I use Varney's points exclusively, and have used them continuously during the past six or seven years, and find that the smoother the point the more condensed is the filling. I used to replace these points when the serrations had become smooth and worn, until experience taught me differently.

The greatest care should be exercised in the treatment of the pulps of the teeth, especially when necessary to cap them. The former custom was to cap the pulp, and then put in a temporary filling for four or six months, before placing the permanent filling in the cavity.

In my judgment, this should only be done in exceptional cases.

After thoroughly cleansing the cavity, and seeing the pulp, should it be exposed, we should be able to form a correct idea of the condition of the tooth, without consulting the patient.

The want of success in the treatment of diseased and ulcerated teeth is often due to improper treatment. The fault, as a rule, lies with the dentist, who, although competent to treat these cases, hesitates to sacrifice his valuable time to this tedious work; the remuneration is so small for the amount of time consumed in their care, and so little gratitude is displayed by the patient, that one is not surprised at the wholesale slaughter of these teeth.

In such cases where the pulps are decomposed, and fistulæ have formed, also in diseases caused by neglect, or of long standing, where the alveolar process or the root of the tooth is necrosed to a certain extent, a cure can be effected, and the tooth saved almost invariably, especially single-rooted teeth, and a majority of the superior and inferior molars.

My mode of treatment is as follows:

I invariably measure the root of the tooth with a smooth broach, to ascertain its length, before trepanning the alveolar process. After having obtained an unobstructed passage, a little broach wrapped with cotton, and saturated with carbolic acid or creosote, is forced through the canal, the medicine passing the apex of the root, and out through the gum; this is repeated every other day. When necrosed bone is met with, aromatic sulphuric acid is occasionally injected. In ulcerated teeth, I do not think the use of iodine advisable, for the reason that it closes the canal of the tooth, and also the opening in the gum, thereby forcing the use of the lance, which of course causes unnecessary suffering to the patient.

The treatment above given, when thoroughly and vigorously used, seldom if ever fails to effect a cure.

Inflammation of the periosteum has frequently been mistaken for a diseased or putrified pulp, and the error is only discovered after the patient has gone through much pain, produced by false diagnosis and treatment.

Treatment in these cases is simple and painless.

When the disease is caused by a blow, or by sudden change of temperature, the treatment should be counter-irritation with concentrated ammonia, or the local application of iodine, for three or four days. This treatment is also advisable, where the inflammation is so great that the teeth are partially displaced from their

sockets, making it impossible for the patient to completely close the mouth.

I remember the cases of two young ladies, one I treated about five years ago, and the other more recently. Both teeth were the inferior molars, in the condition above mentioned. I applied leeches to the gums, which caused the flow of all the congested blood, followed by a quantity of healthy blood. This restored the teeth to their normal condition, allowing them to assume their original positions in the sockets, thereby promoting a healthy action of the parts affected, leaving only simple inflammation, which was easily cured by the usual iodine applications. The usual time consumed in restoring a tooth to a healthy condition by this mode of treatment is from ten to fourteen days.

The most difficult case I have had for some time was the treatment of a tooth of a young lady about eighteen years of age; the tooth was apparently sound, that is, free from caries. A swelling was observable in the mouth, extending from under the nasal organ to the hard palate, and into the maxillary sinus; and was caused by the dead pulp of the left central incisor.

I drilled an opening through the palatine surface of the tooth, allowing about half an ounce of thick yellowish pus to escape. Upon further examination, I discovered that the usual treatment would not answer, as it was impossible to trepan through to the root, the same extending into the maxillary sinus, and the lip was too short to allow me to reach the apex of the tooth by making an incision through the gum; so I determined to try the operation of replantation, being aware that replanting, even with a previous injection of dilute carbolic acid, would be uncertain treatment. So I concluded to saw off one-third of the root before replacing the tooth in the socket, thus enabling me to drill a slanting hole to the end of the root, having previously made a plate to fit over the point of the tooth, to keep it firm while under treatment.

I drilled a hole in the plate corresponding to, and in direct line with, the opening in the tooth; the object of this opening was to allow the introduction of a hypodermic point, by which means medicine could be introduced through the tooth without disturbing it while becoming firm in the socket. The case was treated daily for five weeks before a permanent cure was effected; and now, after the lapse of five years, I can pronounce the case a success.

I would like to call your attention to the imperfections which

appear in the permanent molars, bicuspids, and the superior central and lateral incisors, consisting of a defective or incomplete union of the enamel in the fissures of these teeth. These defective points in the enamel cause a lodgment for the secretions of the mouth and food, and thus cause decay of the teeth. I advocate the cutting out of these deep fissures, and filling them, whether they be decayed or not. I have frequently been on the point of pronouncing such teeth sound when examining them, and should have done so, did not a rotary movement of a sharp-pointed probe reveal to me a slight opening, which, being followed up, disclosed a mass of decay which extended to the pulp of the tooth. It frequently occurs, after cutting through one of these little fissures, that we find the tooth a mere shell, with only a thin wall of the enamel remaining, making a long and tedious operation for the dentist, as well as a painful, expensive, and unreliable one for the patient.

Bear in mind that I do not advocate the indiscriminate cutting out of all molar teeth, but only those that have deep fissures; and where there is any doubt regarding their liability to decay, it is best to simplify our operations by doing the work in time, as it benefits our patients, and saves us much unnecessary after work.

Our own constitution should have a little consideration, as I am fully aware that the life of a dentist is not a very healthful one, owing to the confinement necessary in the practice of our profession.

Thanking you for the honor conferred on me, I trust I have at least repaid you for your patient attention, by throwing some light on the subject, which may serve some of you hereafter in your treatment of similar cases.

A Case of Cleft Palate.

BY F. A. ODERMATT.

Under the head of Mechanical Dentistry, I have a case to report, which I think may prove of considerable interest to the members of this Association. There are some members present who have seen the case both before and after completion, and who may now desire to know the result, after almost three months' trial. About the 10th of January, a gentleman from Arizona, Mr. A., 32 years of age, on recommendation of Dr. Calvert, Sr.,

called to consult me in regard to an appliance for the correction, at least to some extent, of a congenital fissure of the palate; stating that two plates had already been made for him, from which he derived no beneficial results. He desired to know whether an appliance could not be made that would improve his speech, as he desired, above all, in order to carry on his business properly, to be able to make himself understood. I simply told him that I thought an appliance could be made that would greatly assist him, but that a great deal of time would be required in working out the case, and his patience would be almost exhausted before a satisfactory result could be reached. Being willing to allow all the time that I desired, I consented to undertake the case. On a thorough examination, I found both the hard and soft palates wanting; the fissure being fully one-half of an inch wide—too wide for a successful operation of staphyloraphy. In the right anterior nares I found the lateral incisor completely inverted, and it could be seen by any casual observer. I have here a model of the case, which I have retained, and offer for inspection to the members present. Before I proceed further, I wish to state that I do not consider it absolutely necessary, in cases of this kind, to obtain an impression of the entire depth of the fissure, in order to make an appliance that will accomplish the desired effect. The impression from which the present model was obtained was taken as follows: On a simple impression cup, S. S. White's No. 1, a quantity of warm wax, enough to fill the fissure, was placed, and firmly pressed up into the roof of the mouth; on removal of the cup, the wax was trimmed down so that a layer of plaster about a sixteenth of an inch thick could rest between the wax and the tissues. I then constructed an apron of wax on the posterior portion of the cup, extending it back to the posterior wall of the pharynx, to protect the throat from escaping plaster; the sides of this apron were trimmed so as to leave the bifurcated uvula entirely free from contact with it. For illustration, I have here a cup thus formed.

The next step before taking the impression was to press enough warm gutta-percha and wax, such as is commonly used for base plates, into the deepest portion of the fissure. The surface that would come in contact with the plaster was oiled, and the whole allowed to remain in position until the impression was taken, as in ordinary cases, except that the plaster was used a little thinner. No difficulty was experienced in removing the impression, and the only fractures of the plaster that occurred were on the

buccal surfaces of the bicuspids and molars on both sides, the pieces being easily replaced in their proper positions. After obtaining a model, a plate to bridge over the fissure of the hard palate was constructed in the same manner as ordinary partial upper vulcanite dentures, except that gold clasps were added for the first bicuspids and first molars. When ready for the flask, the soft palate portion was separated from the model with a thin saw, and the case flasked, packed, and vulcanized. I used Samson rubber for this case, and use it altogether, as I consider it the best, having obtained the best results therefrom. After finishing the plate and adjusting it to the mouth, the construction of the soft palate was commenced. Now, gentlemen, this being my first case, and the fissure so extensive, I must admit here that I was greatly puzzled how to begin; and it was only after making four different palates of soft or vellum rubber that I obtained one that was satisfactory, and which has been worn up to the present time. I have sought throughout to accomplish the best results by keeping always simplicity of construction in view. I think, on the whole, the result thus far obtained is very flattering, considering the satisfaction to the wearer, who would not part with or be without it for anything. The only thing I have found unsatisfactory is the destructibility of the vellum rubber composing the soft palate, which I am now replacing with gold.

In conclusion, gentlemen, with permission of the President, I will introduce Mr. A., who has kindly volunteered to come here and subject himself to your inspection. He will no doubt tell you his experience with other plates, and answer any questions concerning the case.

Report of Committee on Mechanical Dentistry.

BY JOHN RABE, D.D.S.

As the majority of your Committee on Mechanical Dentistry have made or will make some elaborate reports on special subjects, it only remains for us to make a short general review, as we know of little or nothing new, worthy of any very particular mention. We therefore respectfully submit the few following odds and ends of laboratory work:

Continuous Gum Work, by merit, heads the list in all artificial teeth. This we all concede; and so perfect has it been for years past, that we hear of very little improvement.

The Lilliput Furnace, a perfect little giant, is praised very highly. It is only 15 inches high, 12 inches wide, and 8 inches deep, doing the work easier and better than the old large one.

Dunn's Porcelain Work still holds its own with its friends; is not used upon this coast, we believe, as we have heard nothing new about it.

Gold Work in full sets, teeth attached with rubber; partial sets, teeth soldered with gold — we consider as being the next best.

Few of these full sets seem to be made now. The partial gold cases in many of the city offices amount to more than the partials in rubber or celluloid combined. This can be said of only about a dozen offices; the balance, say about one hundred and fifty of them, rely mainly upon rubber, celluloid, and vulcanized gutta-percha. Aluminum (Watts' or Weston's metal) is not used in regular practice, we believe, although we consider aluminum worthy of more attention.

Rubber is more universally used to-day than all other materials combined. We notice something new in that — in the advertised "Snyder's 15 min. Rubber, at 320° F.," vulcanizing in that time, as good as any colored rubber, and claiming extra advantages for it in repairing cases. We have not used or seen it.

Doherty's Weighted Rubber has been in use over two years. We have used it in three or four sets—partial lowers—but are afraid the metal impairs its strength materially. It works the same as ordinary rubber, and for lower sets has the advantage in weight.

Have used most of the rubbers manufactured, and now prefer using Whalebone. We had trouble with it some three years ago, in its scaling, etc. Still, it is one of the best rubbers, and is used exclusively by many who claim it to be next to black rubber, which we all know to be the purest, strongest, and best, wherever it can be used, regardless of cost. Whalebone and black should be used extra thin, vulcanized slowly and carefully. You cannot stand across the laboratory and throw it together, or let the vulcanizer go it alone, and make the best work, as we have often heard said of White's and other rubbers.

We have been bothered occasionally by the rubber shrinking away from the pins and teeth, and in some partial sets have had the teeth quite loose. While growling about this one day, Dr. Luce of Oakland inquired if the wax had all been thoroughly removed. We were positive it had been, by the use of boiling

water, pouring it upon the teeth in a small stream, and held about a foot above the flask. Yes; but try the *old method* of washing the pins and teeth with alcohol, just before packing, using a brush, and pour the alcohol on two or three times, or you can dip the brush in alcohol, as you please. Well, we did so, do so now, and shall do so as long as we are compelled to work this infernal rubber; for it cured our trouble completely, and scored one for *old methods*. We pack joints with thinly mixed plaster, dry out a little while trimming flasks, cutting escape vents, etc., and then use the alcohol. Some make a particular point of having notches filed in flasks opposite the joints of a full set, in order to cut the escape vents to them, and by so doing relieve the pressure at such points—making better joints, and lessening the liability of cracking thin gums. By using thin model wax, flowing it smooth with a blow-pipe, and before packing burnish heavy tin-foil down smoothly upon the lingual surface, you save considerable time and hard work with the scrapers, as it comes out smooth and ready for polishing at once.

There are several new packers and vulcanizers for rubber and celluloid work combined, but we have had no experience with any of them. Celluloid has its many firm friends—some from choice, others from a Bacon choice. It seems to be gaining in favor, judging from the reported increased sales of material.

We hear something new in the manner of working this material, by Dr. Bishop of Alameda, who has been using it exclusively for several years. His greatest trouble was to get the teeth to set as close to the gums, when finished, as they did upon the plaster model. They always seemed to press into the plaster, thereby making the teeth too long; and in most partial sets this ruined the teeth completely. He has partially overcome this trouble by using no model plate in investing—simply cutting out the trial plate, leaving a thin coating of wax over the pins, and if using an air chamber, smoothing the edges of it with wax—and then after thoroughly varnishing, and oiling or soapstoning it, so as to separate easily, pours the investing plaster direct upon the model and invested lower half. This he finds shrinks enough, when pressed together with the celluloid blank, to give him the right thickness of plate, light and thin, ready for sand-paper and polishing, without using scrapers.

We confess that we should prefer to see the Doctor make a set in this way, before trying it ourselves, and hope he will give us

his experience in full, along with his experiments in making polishing celluloid tape, wheels, and disks. In general, he has had good satisfaction, and prefers it to rubber. We used it three years exclusively, and wish no more of it, at least in its present condition.

Vulcanizable gutta-percha is among the latest, if not *the* latest, material for mounting teeth upon. And it already makes a better showing for durability than celluloid. It equals rubber, and in a few points seems to excel it. We hear flattering reports from several dentists who have used it for years with good success.

Dr. Pope of Oakland has used it for some time, and speaks very highly of it. He showed us several of his plates, some finished, others partially finished. We could see very little if any difference from rubber. He claims it to be as strong and good, and far easier to work than celluloid or rubber.

When limited for time you can use it for a trial plate, the same as ordinary gutta-percha. Then, after trying in the mouth and getting every thing all correct, give it the proper fullness and shape for your permanent set, fasten tightly at the edges upon the model, invest in solid plaster in flask, and vulcanize, saving the time and bother of packing, etc. This method is practical in all repairing cases. Use no wax, thereby saving one-third of the time. Where you invest and pack in the same manner as with rubber, care must be taken to make small escape gates, as it is softer and runs much more than rubber. In vulcanizing, take a half-hour to reach 320° F., and hold there one hour and fifteen to one hour and thirty minutes, according to the thinkness of the plate. Finish the plates the same as rubber.

White's latest laboratory lathe appears to be of value, having some new and good points in addition to the old one of the jointing wheel facing the workman. It has a universal chuck, and can utilize all of his old mandrils and chucks. And also, the mandril or chuck for holding the engine tools comes in good play in making, turning, and polishing new points, mounting corrundum wheels and disks, making and mounting corrundum balls and cones for use in the operating-room, doing it better than with the engine, and also saving wearing of the engine.

To clean the corrundum wheels, and moisten them, we use a simple arrangement, made out of a tin can, by cutting a hole two inches long and one inch wide, just even to the center of the wheel upon the lathe, the can sitting just back of the wheel; then

place a piece of lead or zinc in the bottom, to weight it down, pour in water, and then fill in with a loose sponge, pulling the sponge out of the hole about an inch, in order to touch the wheel.

Amongst the most convenient odds of our laboratory are the brass molds for making small or large corrundum wheels. Dr. Knowles, we believe, was the first upon this coast to manufacture them, in addition to a host of just such other good things. Any dentist can make the wheels in daily use out of old broken laboratory wheels, with these molds, that any brass turner can make. Ours cost only twenly-five cents apiece. Then with the assistance of a strong flask clamp, press the warmed mold and material together, after heating them in boiling water.

About pointing and tempering instruments: these we always shape and temper IN BULK, for a good cutting edge, shaping the blade and cutting edges upon the lathe stones afterwards, being careful to keep them wet, so as not to draw the temper. It will be found convenient to have two or three shapes and grades of wheels.

For restoring the polish upon artificial teeth when the enamel has been ground, use a pewter wheel and pulverized tripoli.

For cutting cavities in artificial teeth, we saw the engraver use ground diamonds, or diamond dust, upon small steel wheels; moisted with oil or alcohol, it cuts very fast and easily. Why could not this be used in the mouth? It surely would do the work wherever a wheel would answer, if the cost of the diamond was not too much to be practicable.

Mr. President, we do not speak of any of these different points as being new to you or the rest of our members. Our aim is to create discussion upon any or all these subjects, so that we can get the experiences of you all, as far as your valuable time may permit.

Dr. Sichel. I want to say a few words, if there is no objection. I believe there are not many gentlemen who are aware that what is given here is not entirely new—"vulcanizable gutta-percha." In 1866 there were made "vulcanized gutta-percha" plates. I have made many of those plates. I have them yet, and I can produce them now. It will answer the same purpose as rubber; it is nothing new.

Dr. Robinson. The paper may not have so much absolutely new, but a great many ideas are presented in good shape. I

know I have learned some things from it. In speaking of tempering instruments, I have this to suggest: Of course you must first harden them by heating them red-hot, and plunging them into cold water; then take white wax, pour it over, and hold them in the flame of the spirit-lamp till after the wax is burned off, and you will get a first-rate temper.

Dr. Goddard. The Doctor spoke of drilling retaining points in cavities made in artificial teeth. I have been able to do that by making the drill full hard, not drawing the temper at all, and then grinding it to an edge.

Dr. Harding. The report on Vulcanizable Gutta-percha is very flattering, but unless some method of preserving it has been discovered, better than what it was when I had considerable experience with it, a great many years ago, the practitioner had best go slow. I have in my office a number of plates of vulcanized gutta-percha. Fifteen or sixteen years ago it was very common, and I think it has been used more in England than in this country. There is one trouble with it: it resists for a time the action of the fluids of the mouth, and it becomes very nasty at the same time. Take a partly broken plate; it is broken only half-way through, but the other half seems to have no life to it. It will stay in any place you put it. It is not that way with rubber.

Dr. Holmes. The gentleman referred in the paper to aluminum. About seven years ago I made a plate for a gentleman in New York. He wore it some three years, and I received word from him since, that the plate became porous from the action of the secretions of the mouth. It had a nice, light effect, and he was pleased with it; so was I, but the results were not what I expected. While I think of it: I have been using these sea-tangle tents. They act very quickly, for they absorb the moisture, and I think they are just the thing.

THIRD DAY.—EVENING SESSION.

The Association met at 7 P. M., pursuant to adjournment, President Younger in the chair.

The following officers were elected for the ensuing year:

President, S. E. Knowles, M.D., D.D.S., of San Francisco; Vice-President, J. L. Asay, M.D., Visalia; Recording Secretary,

S. E. Goe, D.D.S., San Francisco; Corresponding Secretary, H. E. Knox, D.D.S., San Francisco; Treasurer, J. J. Birge, San Francisco; Librarian, F. A. Brewer, D.D.S., San Francisco.

The officers elect were duly installed, and the Association adjourned to partake of a dinner given by the San Francisco Dental Association.

FOURTH DAY.—MORNING SESSION.

The Association was called to order at 10 A. M., President S. E. Knowles in the chair.

In order to meet the requirements of the law, a Board of Trustees, consisting of the following-named members, was elected: Drs. Wm. Dutch, S. E. Knowles, H. E. Knox, W. J. Younger, and J. J. Birge.

FOURTH DAY.—AFTERNOON SESSION.

Order was called at 2 P. M., Dr. S. E. Knowles presiding.

On motion, it was decided that the next annual session be held in San Francisco, commencing June 1st, 1882.

Electricity, and Its Uses in Dentistry.

BY D. CAVE.

The object of this paper is not to go into details in regard to the history of the development of electricity, but to impress upon the mind of every dentist, the importance of making himself familiar with this branch of natural science.

According to history, all the knowledge the ancients had about this peculiar and invisible agency called electricity, was limited to the fact that amber, of which the Greek name is *electron*, would show electrical properties, by attracting small particles when subjected to friction. It is said that Thales, of Miletus, a celebrated

Greek philosopher, was the first who observed this phenomenon in amber; others subsequently discovered similar properties in lyncurium and agate; but beyond these, the ancients knew very little about electricity; and with the fall of the Lyceum at Athens, it had to share the fate of all other natural sciences, and remain in a dormant state for over two thousand years, whence but a century ago it was taken from the dust of oblivion, and again called to life by the discovery of the Leyden jar, and Franklin's kite experiment, whereby the identity of lightning and electricity was proven. Since that time a new era of fertile investigations has begun, great discoveries have followed each other in rapid succession, so that to-day electricity is one of the most important chapters in the study of natural science.

By the aid of electricity the greatest and most wonderful discoveries have been made. Meteorology owes to it the most rapid and successful progress; by its means the most perfect instruments have been devised for the study of calorics; chemistry is indebted to it for the discovery of new elements and the formation of new compounds; physiology has acquired through it a more perfect knowledge of the forces which rule animated matter, and the secret of acting on such matter, almost, as life itself. Medicine has found in it the means of curing some derangements in the human system, that were before considered incurable; metallurgy has found in it the means of molding and applying metals; to mechanics it has given a force as quick as thought, and equally independent of space and time. In short, we cannot pass the threshold of the scientist, the professional man, the mechanic, or even the tradesman, without encountering in our path the marvels of electricity.

Let us therefore consider how much value the study of electricity would be to the practicing dentist who has the elevation of his profession at heart, toiling on in the faithful discharge of his duties. The answer is found in the manifold applications of it to the various branches of dentistry, which I will now endeavor to show.

I will first mention galvano-cautery, and its use in such dental and oral operations as the dentist may be called upon to perform, and which have already been successfully made. Although the galvano-cautery is only an improvement on the actual cautery, by the use of electric fire in heating its burners, instead of the alcohol lamp, I think it well worthy of mention here. It is a well-known

fact that the actual cautery has been held in high esteem among surgeons from time immemorial, in the performance of certain surgical as well as dental operations; and we find its use recommended in some instances in dentistry, by such authors as Koecker, Harris, and some others; but while some dentists have had very good results in its use, it has not seemed to grow in general favor in dentistry, especially in this country. The reason for this lies with the imperfect iron burners, the deficient mode of heating such small-sized burners as are often necessary in dental operations, and their rapid cooling, necessitating the keeping of the alcohol lamp in such close proximity to the patient as to fill him with terror of the *modus operandi*, not only on account of the pain which attends the operation, but for fear of being burned, besides, in the face or some part of the mouth. For these and other reasons, the actual cautery became obsolete in dentistry; but since electricity has, through the perseverence of Middeldorf, furnished surgery with a new means, all former difficulties, especially in dentistry, are overcome. Middeldorf has recently succeeded in constructing an improved apparatus, based on scientific principles, called the galvano-caustic apparatus, whereby the patient need not see the fire before him, the battery being kept at a convenient distance, and operated by an assistant; the platina burner is introduced cold into the mouth, and placed in position, and by a movement of the finger the electric spark heats the burner instantaneously to a white heat, doing the work perfectly and almost painlessly. There is no wonder, therefore, that the galvano-cautery has grown so rapidly in favor with surgeons and dentists alike.

Among the first to employ the galvano-cautery successfully in dental operations were Crosell of St. Petersburg and Heider of Vienna; and others have had more or less success with it in dental operations. But it was not before Middeldorf constructed his apparatus, and invented the loop instrument, that galvano-cautery became a recognized method in surgical as well as dental operations.

In 1867, Dr. J. Bruck of Breslau published an essay on galvano-cautery, enumerating a list of dental operations where he employed the electric fire successfully, the most important of which are as follows:

For the extirpation of the living nerve in roots to be prepared for pivoting, or in aching crownless teeth too far gone for filling;

also in teeth where the crowns break off in attempting their extraction, especially of molar teeth.

In the treatment of necrosis of the jaw, for the removal of pedunculated as well as broad-based epulis; also for the eradication of polypous growths, and in the operation on ranula, and finally for the purpose of arresting hemorrhage.

In addition to these, I would mention its utility in other dental operations, which have been experimentally developed in my own practice, as follows:

Its use is advisable where but one sitting of a patient can be had, on account, for instance, of his living out of town, when both extirpating the nerve and filling the tooth are urgent, or in such cases where devitalization of the pulp by means of arsenious acid is necessary, and its subsequent removal found to be quite painful, it is much better to extirpate it, or any portion, by the aid of the galvano-cautery, than to make a second application of arsenic; because the galvanic heat causes hardly any pain in such instances, and the whole operation can be completed at the same sitting. It also accomplishes the perfect drying of the root canals, before filling, and stops the oozing of blood, if there should be any, from any root canal, thereby facilitating the saving of the tooth by a more perfect filling.

I also find that galvano-cautery will obtund sensitive dentine in the excavation of cavities, and will allay pain in eroded teeth, especially when the erosion has taken place around the neck of a tooth.

I also consider it almost indispensable in acute cases of hemorrhage, after the extraction of a large number of teeth, because it is much more difficult to control it by styptics or escharotics and compresses, for the reason that if one place is plugged up, the blood will force itself through the next socket; while by the use of the electric burner, which can be introduced as deep as necessary into the socket, we reach the very mouth of the broken blood-vessel, and obtain a perfect coagulum.

I will now pass to another valuable means which electricity places in the hands of the dentist, namely, the induction instrument; and I will point, first, to the importance of electric irritation in cases of asphyxia caused by anæsthesia, and urge those practitioners who use anæsthetics in dental operations to perfectly familiarize themselves with the mode of applying the current, and have the apparatus always ready before the patient

is anæsthetized, because accidents are liable to happen at any time.

It may also not be out of place to call your attention to the use of the constant and interrupted current in the treatment of neuralgia, as well as its application in paralysis of the nerves and muscles, as far as might come within the province of dentistry; and let us not forget the utility of the galvano-puncture in the treatment of tumors.

And now, if we should look around an operating-room, to discover any other use for electricity, we surely enough will find it in the electric engine and the electric mallet. We use these instruments for the purpose of preparing cavities, and filling them with gold or other materials; but it occurs to us that the new departurists tell us that there are galvanic actions in the mouth. We naturally wish to learn how true these theories are, therefore we have to become acquainted with the use of the Tangent Galvanometer, with the aid of which we would be enabled to detect the slightest electric current, if any exists.

Next, let us walk into our laboratory, and here we find we have a large field for the application of electricity. By its aid we are enabled to cover with pure gold, full, as well as partial dentures, manufactured of 18-carat gold, thereby accomplishing the double purpose of giving the denture a uniform and beautiful color, and preventing the oxidation and unpleasant taste of the solder. It also affords the means of depositing all other metals, as might from time to time be required, on either metallic or non-metallic surfaces, and by the study of galvano-plastic and its practical application in mechanical dentistry, for the purpose of obtaining metallic impressions of the plaster casts in the construction of artificial dentures, as those that make this branch of metallurgy a specialty, the dentist of the future, may, after having taken his impression for a denture, have only to set at work his batteries and other electrical instruments to accomplish his task for him, while he would have simply to attend to the reading of the variations of galvanometers and other instruments, and thereby producing a more artistic specimen of a denture than the best dentist of to-day could turn out by hard manual labor and the sweat of his brow. But aside from mere speculation, there are yet many ways in which the dentist can employ electricity in chemical as well as physiological experiments; but they commence to be of value only when we have learned to examine critically our own

and others' observations, and to unite them in their causative connections. And when we have learned to judge the nature of things by their outward appearance, and the general laws relating to individual and accidental appearances; when we do not join facts in a planless manner, but are guided in our researches by leading ideas; when we put questions to ourselves, and answer them in a circumspect method—in such a sense, the study of electricity and its experimental application to the various departments of dentistry, cannot but add to the elevation of our profession.

Report of the Committee on Operative Dentistry.

BY WILLIAM DUTCH, D.D.S.

The principles underlying the mechanical part of the practice of dentistry, as it is daily presented to us, do not differ materially from those conceived by the founders of the profession. The same objects, viz., the salvation of teeth, which are striven for now called forth energetic efforts then.

Such rapid strides have been made in the adoption of methods (many of which have been discarded), so many new appliances have been brought into use, that, as we stand to-day, we can but wonder that teeth were filled at all fifty years ago.

So rapid, indeed, have been the changes, that a decade would mark the existence of one or more epochs in manipulative dentistry. New materials, and new methods of practice, have been so numerous, following each other in such quick succession, that oftentimes good and tried things have had to fall back, in order that new and perhaps inferior ones might take their places in the front rank of experimental dentistry.

Without wishing to be understood as placing any impediment in the way of still further investigation, the object of this paper is to counsel a momentary pause in the lightning-like march into new fields, and take a close survey of what we now have, or perhaps have neglected.

Different men, or men in different periods of professional life, will make use of materials and methods unthought of by others, and it is just such meetings as we are celebrating to-day which demonstrate the fact; and through this medium, good ideas may be disseminated, interchanged, and absorbed. I might say, that

it is only through this medium that the little things in practice are taught. And if we would keep pace with the times, it behooves us, individually, to take hold and help "spread the light."

To begin, I desire to call attention to one of the past and almost discarded matters. I mean the use of gilded platina, or platina gold (it matters not what it be called). Within the past year or two, it has been my practice to give this preparation some consideration, and it now occupies an established place in my operating outfit. In certain kinds of teeth, and for some purposes, it is exceedingly useful. When thoroughly condensed and finished, it presents a harder surface than gold alone. It may not be endowed with the same degree of cohesiveness, but it certainly stands in the mouth, even when built up on the articulating surfaces of teeth, better than gold. Again: the color, when polished, renders it less objectionable, if used in or upon dark blue teeth; and if properly managed in conjunction with pure gold, it admits of gradation of color.

As there is a growing desire on the part of a great mass of people—and some of the profession—to obtain some way by which dental operations may be performed with little labor and corresponding fees, I wish to speak of one way this may be accomplished in some cases. We sometimes meet with molar teeth containing large crown and buccal cavities, which, in consequence of the absence of antagonizing teeth, are non-masticators, or partially so at least. These cavities may be prepared just as would be done for the reception of any kind of filling, except that the margins present a regular, even form, filled nearly full with gutta-percha or wax, leaving the margins of the cavities clearly exposed. Impressions may be taken of the teeth, a model made of plaster, and pieces of pure gold plate, say twenty-two or twenty-four, Stubs' gauge, nicely fitted to conform to the margins and the shape of the natural crown of a tooth. The inner surfaces of the gold pieces may be niched with a sharp graver, presenting a roughened, retaining form. From the foregoing description, it will be seen that these pieces of gold plate are only to occupy the surface of the cavities. The filling may be made of gutta-percha or any of the cements. If the latter be used, it will only be necessary to place the plate of gold in position, while the material is still in a plastic condition. If gutta-percha be used, the gold should be heated and carefully pressed to place, and the edges burnished down flush with the margins of the cavities. Durable

operations may be made in this manner, saving the trouble and hard labor which attaches to packing in large gold fillings. I am not bringing this matter up, claiming any originality. For operations of this kind were frequently made years ago. I now allude to it simply to recall it to the minds of some who may not think of it.

It has been my experience of late years to see many fillings fail, because of careless and faulty use of the file after filling. It seems to be the practice of some operators to pass the separating file between teeth to be treated on their proximate surfaces. After filling, the file is again passed through, trimming off the gold flush with the tooth, thereby leaving two parallel surfaces (or nearly so). We may almost always expect that space between teeth treated in this manner will, in time, become obliterated, when two flat surfaces will be brought in direct contact. It does not require a very astute mind to predict the result of this pernicious practice. Under such circumstances, it is next to impossible to have these places kept clean without the use of the floss-silk, and it is only one in fifty persons who can be induced to use this means for cleanliness. The surface of teeth, after operating, should be left as nearly as possible as nature made them; that is, if any portion of the teeth must be in apposition, let it be the coronal portion, with sufficient space at or near the gum to admit of the introduction of the pick, and to allow the fluids of the mouth to flow through. If a little trouble to separate by pressure be taken, this can always be done. So thoughtless are some in this particular, that it amounts almost to criminality; this action springing solely from the desire for gain.

Having met with so many cases of death of the dental pulp after filling, I cannot let this opportunity pass, to utter a protest against the impunity with which some operators introduce large gold fillings in close proximity to the living pulp, even though it be not exposed. There is one fact in natural philosophy bearing upon this matter that must not be lost sight of, which is, that the conductibility of a gold filling is always in direct ratio to its density. This may be regarded as explanatory of the fact that the old style of soft gold fillings would be and were tolerated by the pulp when placed in close proximity to it. I have met, in my own practice, cases wherein large, soft gold fillings have been removed, and replaced by others made of cohesive gold, well impacted throughout; and, although no portion of the dentine

nearest the pulp had been removed, the pulps were found to have lost their vitality after a few months' time. I am well convinced that the cause was due to the increased amount of metal placed in a given space. So strongly am I impressed with the correctness of this course of reasoning, that I invariably interpose a capping of some sort over the floor of the cavity, especially in teeth of children.

As to the capping of exposed pulps, I have but little to say. My method is to place a piece of thin paper, saturated with a solution of balsam of fir and chloroform, over the exposure, even permitting it to extend well over the floor of the cavity, and form the capping of *os artificial*, or some kindred material. My object in using the paper is to avoid either mechanical or therapeutic irritation, which might be caused by the material applied.

Pivot teeth have been somewhat improved during the past year. Two or more forms have been introduced, and are kept in stock by our dental stores. Those of Dr. Bonwill seem most easily adjusted. In shape, they are much like the ordinary pivot tooth, with the pivot chamber or hole passing entirely through, and are attached by means of a pin or screw, anchored with amalgam or cement, extending into the root, and almost through the opening in the crown. When little strain or force is likely to be exerted, this method of inserting pivot teeth possesses advantages; but the appliance, when completed, seems to be lacking in strength, owing to the size of the chamber which receives the screw. The molars and bicuspids are specially deficient in this respect. There are other forms in the market, but it is questionable if any, when strength and durability are taken into account, are superior to the ordinary plate tooth, properly adjusted, for the six front teeth.

Some new appliances have come to light during the last year; more, however, in the way of improvements than any actually original inventions.

Johnston Bros.' new hand-piece for the dental engine being the most important, perhaps, and is styled "Cone Journal Hand-piece, No. 2." The chief improvement lies in the fact that a cone-shaped enlargement is made on the shank of the burrs, which is, by the locking device, drawn against the bearing at the end of the hand-piece. The principle on which this appliance is constructed certainly is good; and if it will stand the practical test, it will take a place second to none now in use. The expense of buying

an entire new set of burs is overcome by a promise on the part of the manufacturers to alter old burs for use in the new hand-piece, at the nominal cost of 25 cents per doz. The locking device is not quite so simple as others now in use; but if a hand-piece has been given us that will run true and steady, under all circumstances, which this promises to do, that objection must yield to the increased advantages.

This hand-piece is so constructed that it may be attached to either the Morrison or White machines with equal facility.

Dr. Younger. I agree with Dr. Dutch in regard to the Cone Journal Hand-piece. I have used it since it was brought out, and it suits me better than anything I had before. On this subject, I want to suggest to the profession, that they use a column of water in a cavity while excavating. It is a wonderful relief to the patient, and lessens the pain 50 or 75 per cent. It is a great benefit. You can go on with your operation, and the patient will not make a single motion. In using cold water, you prevent the overheating of the instrument, and depressing the vitality of the tooth.

Dr. Dutch. This water business, as the Doctor represents it, is new to me. I will say this, about our burrs: Every gentleman should be cautious about the matter of heating. You need not get so much heat, whatever you are doing. If you have a sharp instrument, you do not need a strong pressure.

Dr. Robinson. Did I understand Dr. Younger to say he used cold or tepid water?

Dr. Younger. Both cold and tepid, sometimes, when the cavity is exceeding sensitive.

Dr. Robinson. That comes again to what we were taught before, to keep the cavity dry, and use a sharp burr. Another thing I would like to ask Dr. Dutch, about the colored gold. He spoke about cases in which they had preparations of platina and gold. I would like very much, for one, to see that, and I would appreciate that part of the report very much, if he would only bring that preparation, and explain the practice he has gone through to obtain that result.

Dr. Cornwall. Dr. Dutch referred to me as having seen some samples of that work. I was gratified in having an opportunity to see the samples, and I think them very fine indeed. I think that suggestion would be exceeding useful, in very many cases, to members of our profession.

Dr. A. Warner. I have used this platina gold for perhaps seven or eight years, and as regards its wearing better on the masticating surfaces, I would agree with the paper. As to the color, I think it is a delusion, and a trap for a great many of us to fall into. I had a filling put into my own tooth, and after that I saw several patients with their teeth filled with Dr. Blake's gold. As a matter of beauty, it is a failure. I believe in blue teeth it is no improvement on the gold filling. It might be, if you brightened it like a diamond. When you are speaking of gold, there are so many different colors you give to the gold fillings that it has quite a scope and variation. I have seen several of those fillings referred to that looked as beautiful in color as an old door-knob that had not been polished.

Dr. Cornwall. I quite agree with Dr. Warner in his views. The particular point I understand Dr. Dutch to have made, is as to the addition of the gold in excess of the material, and that is not the condition that Dr. Warner refers to in using it—the addition in such a proportion of the gold as to alter the color very materially.

Dr. Dutch. I was going to tell the gentleman I did not use it in the same way that the Doctor referred to. What I have submitted, I have submitted to half a dozen persons well known to the profession. I did not come here with a boy's story to tell you. I have got the opinion of others. And I claim that this is an improvement over the platina and gold.

Treatment of Irregular Teeth

BY C. L. GODDARD, D.D.S.

As a member of the Committee on Mechanical Dentistry, I have taken for my part of the report, the application of mechanics to living tissues; or, "The Treatment of Irregular Teeth."

There has been felt for so long a want of a text-book on this subject, that we give our heartiest reception to the work of Dr. Kingsley on Oral Deformities.

He has had great experience, and has the happy faculty of describing and illustrating his cases so clearly, that no one can fail to understand and appreciate his method of treatment, and its results.

His treatment consists in moving teeth to their proper position

by any means that seem best adapted to the case, whether it is by the expansion of wood, the screw, the inclined plane, or the elasticity of rubber, applied in the way best adapted to individual cases. In opposition to this system is that of Dr. Farrar of Brooklyn, called by him the "Positive System," and published in various numbers of the "Cosmos." He claims that less irritation and inflammation are caused to the tissues surrounding the teeth by the application of the screw than by any other means. He claims that intermittent and not constant pressure should be used. I think his conclusion is unwarranted, for I have treated similar cases by both methods with no apparent difference in the result. The screw is very efficient; but the application of elastic bands is, in the majority of cases, so much more simple and so effective, that there is no reason to hesitate in their employment.

One great advantage of the elastic band is, that it is working all the time, whether the patient is willing or not. If the screw is used, and the key given to the patient with instructions to turn it occasionally himself, the chances are that the occasions will be less frequent than desirable. A patient will often refuse to inflict even the least amount of pain or even discomfort on himself, who would willingly bear that little inflicted by another person, or by an appliance over which he has no control.

In moving teeth by means of elastic bands, there is very little if any soreness or tenderness after the first few days, and in most cases the appliances are worn without inconvenience. I am very particular to ask patients if the appliance produces any pain, and the answer is almost invariably "No," after the first few days it is worn. It is really wonderful how far teeth may be moved without pain.

The use of the elastic band demands only a firm point of attachment, so that it can pull the offending tooth in the proper direction. The theory is simple, but its application in many cases difficult. Our work is with living organs set in tissues well supplied with nerves. If it were not for nerves, how much more simple would be our treatment! We might drive a tack in the gum near the tooth we wished to move, pass an elastic band over both, and all would be lovely. As it is, however, patients would object, and we must depend on other well-rooted teeth, or upon variously constructed plates, or other appliances to form our firm point of attachment. No two cases are alike, and the

subject will be best illustrated by a description of a few practical cases.

Case A is that of a young lady of fourteen years, the position of whose teeth is shown by cast A, No. 1. The superior central incisors are crowded against each other, forming with their flat surfaces a V, with the base towards the palate. The right canine is entirely outside of the arch, and in front of the lateral incisor, which touches the first bicuspid. The position of the teeth on the left side is similar, but not as bad. The inferior canines were both outside of the arch, and the lateral incisors and first bicuspids nearly touched. The superior and inferior first bicuspids were all extracted. A plate was introduced with a gold band passing in front of the superior arch, from which elastic bands passed over the lateral incisors. At the same time, elastic bands were attached to gold pins in the plate near the second bicuspids, and passed over the canines. By this means, the laterals were drawn forward, and the canines back, until they were in their proper positions. The right canine was moved nearly a third of an inch, and the left canine about three-sixteenths of an inch. A new plate was now made, covering the palatine surfaces of the laterals and canines, and elastic bands were stretched from pins in the palatine surface of the plate, over the canines. These four teeth were thus held in position. The V-shaped position of the centrals was reduced by the action of an elastic band from a pin in the center of the plate, attached to a T-shaped piece of gold-plate which passed between and in front of the centrals. The case was commenced in January, and the second cast shows the position of the teeth the last of May.

The inferior canines were easily brought into position by elastic bands passing from them over the second bicuspids.

Case B, a boy eleven years old. The inferior incisors close outside of the superior, giving that peculiar bull-dog look so usual to a prominent lower jaw. The case presented no unusual difficulties, except the apparent distance it would be necessary to move the superior incisors to enable them to lap over the inferior. By the utmost exertion, the boy could draw back the lower jaw enough to merely touch the cutting edges of the incisors; but was not able to give a square bite, and the molars lacked about three-sixteenths of an inch of articulating. A vulcanite plate was made with a round gold wire extending around in front of the superior incisors. From this wire, four elastic bands were looped

over the four incisors and gradually drew them forward, until they lapped over the lower incisors, and the new articulation was perfect. No effort was made to keep the jaws apart, and the forward movement did not seem in the least retarded by the lower incisors.

The general theory of the movement of teeth in regulating, is that the alveolar process is absorbed in front of the moving tooth, and built up behind. In this case, however, the whole process supporting the incisors was pushed or bent outwards. A glance at the palatine surface of the two models will show the great change in form.

Cases like this demand, in my mind, early treatment. It often happens that, as the permanent centrals erupt, the cutting edges articulate, instead of the superior closing over the inferior. As they elongate, the jaws are thrown farther apart, and the child is obliged to protrude the lower jaw, and lap the inferior over the superior incisors, to enable the molars to articulate. This becomes such a habit, that I have no doubt that the lower jaw becomes permanently elongated.

By slight treatment, when the incisors are erupting, the deformity may be avoided. In the case I present, the forward movement of the superior incisor was very great, as will be seen by a profile view of the two casts, which show the same articulation of the molars.

Case C is brought to show an extreme case, although similar to the first, and reduced by the same treatment.

The fourth case I present is not of very great irregularity, and brought before you merely to show the simple apparatus which may be used in similar cases of greater deformity. The superior incisors projected considerably beyond the inferior, giving the patient, who was seventeen years old, a prominent upper lip, and quite unpleasant expression. The lower incisors closed against the gum and base of the palatine surfaces of the superior, giving no room for a plate, unless it covered the articulating surfaces of the bicuspids and molars. I did not wish to insert such a plate, as I did not wish to keep the jaws apart the length of time that it would be necessary to wear a stay plate.

I therefore made a small plate, covering the labial surfaces and cutting edges of the teeth which I wished to press back. In the plate was imbedded a nickel-plated steel wire, the ends of which projected laterally out of the corners of the mouth about an inch

and a half. The ends were bent in the form of hooks, and rubber straps extended from these to a cap on the back of the patient's head. This tin-type shows the apparatus in position. It was worn only at night, and without inconvenience, and in a short time the teeth were in nearly a vertical position, adding wonderfully to the young man's appearance. This appliance has been worn nights for about six months, and the teeth now seem firm in their new position.

I wish to call your attention to this soft gold wire which I sometimes use to retain teeth in position. It is made from scraps of gold foil, melted and drawn through the draw plate. It is very pliable, and can be applied around the teeth almost with the ease of a silk ligature. There is space enough between the points of contact of adjoining teeth and the gum to allow the wire to pass freely. It is even tolerated under the free margin of the gum; it does not discolor, and is no more noticeable than a gold filling. Where it can be used, it is far preferable to a retaining plate, especially with careless children who are liable to remove a plate and forget to replace it.

FOURTH DAY.—EVENING SESSION.

President Knowles called the Association to order at 7:30 o'clock.

Progress of Dentistry.

BY A. WARNER, D.D.S.

As far as I am able, with limited time and resources, I will give a synopsis of the advancement made in our profession since our last meeting a year ago; and, as I was appointed one of the Committee on Operative Dentistry, you will excuse me if I make a minority report upon that subject, inasmuch as the advancement we are making is principally in that branch. Having made some inquries upon the subject of "Mechanical Dentistry," I find there has been little improvement made. I saw a rubber plate combined with a continuous gum of celluloid, which makes a handsome plate, and is well thought of.

You can see by this specimen (the first made) its beauty, and the way it is made.

It speaks for itself. The regular mechanical dentist has at last arrived at a stage of perfection.

He makes plates as cheap as boots and shoes, plates that will last longer, do not require the skill (judging from some plates I have seen), nor take half the time to make. Besides, the rubber-plate manufacturer has the privilege of dignifying himself by prefixing two letters to his name—Dr.—which mean doctor, and doctor means a teacher, a man of erudition, a learned man, a man skilled in a profession. Hence, you understand why so many are practicing dentistry instead of making boots and shoes, as they were designed to do by a kind providence.

But I pass the subject, and take up that branch of operative dentistry that relates to filling teeth. A year is a short time to look for an improvement; but I shall endeavor to point out a few ideas, which, if not altogether new, are advancing and perfecting.

I note some new instruments not yet put upon the market.

A small instrument, a substitute for the engine, will be useful in absence of the engine, and costs five dollars. It is a right-angled, spring-power hand-drill.

A new burring engine and plugger combined is the latest and most promising improvement I have seen. It is suspended like the Elliott engine, and the same power is used. The hand-piece is ingeniously made, and by a simple turn of the shaft is converted either into a plugger or burring engine. The stroke of the plugger is direct, and I judge, from seeing the first one that was made, that it will, with the promised improvement, become a very valuable machine. The "Electric Mallet," the "Pneumatic," and other pluggers will find this rival soon in the field.

Another instrument will soon be placed upon the market, which I should call a gold carrier. This is a desirable little article made to carry the gold in sufficient quantities to fill a whole cavity, either gold strips, cylinders, or pellets. You will readily see the value of such a feeder in inserting large fillings. An automatic retaining point drill is another new instrument, which, if not of any special value at present, may in time be useful.

I have invented a miniature set of drills and pluggers for filling small pits in the labial surfaces with gold. These miniature drills and pluggers enable me to fill with gold a pit about one quarter the size of one made with the smallest engine drills and pluggers. I made them out of jeweler's broaches, such as we use

for extracting nerves. They are easily made, and if you desire to make a filling nearly invisible, you can do it with these instruments.

Another idea which may be of value to some of you, is to fill these pits with ivory or porcelain. This can easily be done by cutting the pit round and smooth, and plugging it with either material. I filled one this way. It looks very well, and is nearly invisible.

The plug should be beveled like a glass stopper, pressed into the cavity like a peg, and cut off. Progressive dentistry is to be painlessly practiced. The patients are demanding it, and I predict that the near future will bring forth dentists who will operate as carefully, and use as many remedies and agents, as possible to avoid all unnecessary pain—something dentists are not all trying to do now, if my observations are correct. I believe that from twenty to fifty per cent.—yes, often one hundred per cent.—more pain than is necessary is inflicted by careless and thoughtless dentists.

"Painless Dentistry" is the new departure, and I have been practicing it with good results during the past year; I have improved in that accomplishment very much, and it is gratifying both to my patients and myself.

I am now trying to fill teeth without producing pain, and have succeeded in cases that have astonished both my patients and myself.

A common remark of a certain terribly rough and ignorant dentist is, that good operating hurts. This fellow never did any good operating. He could not examine a set of artificial teeth without hurting, so bungling is his way. The question arises, How shall we avoid producing pain and do our work thoroughly?

I will give a few directions which, if carefully followed, will benefit all parties interested in your operations.

First, in examining the teeth, avoid inserting instruments between them, or into cavities in a careless manner. Much pain, that can be avoided with care, is produced by picking along the necks, prying teeth apart, and sounding the depths of decay. Then, heroic wedging is a barbarous practice, and is not at all necessary, if a few hours can be spared to separate otherwise.

The insertion of rubber between the teeth should be discarded entirely. It is not only painful, but in careless hands it is dangerous. I have seen one case where a beautiful set of teeth was

damaged fearfully by using the rubber to separate the central incisors for examination.

The right central was elegated and crooked, and the process absorbed to a great extent. If you wish to abolish this outrageous and painful mode of separating, you can do it by using cotton.

This material has been used by some for a few years, but owing to the difficulty of keeping it between the anterior teeth, it is not used to the extent that it should be.

This objection is readily overcome by skillfully tying and binding it with floss silk. By knotting the silk before it is passed between the teeth, and tying it around the cotton which is crowded between the teeth, it will bind it closely, produce more pressure, and hold it firmly, whether there is a cavity to pack it in or not.

This method is original, and if you try it a few times you will use no other. I contend that we are imposing upon our patients, and bringing reproach upon the profession, every time we needlessly torture them.

Another instrument disliked by our patients is the clamp.

The clamp has been a source of great distress, and in many—yes, hundreds—cases it has been agonizing in the extreme. Yet the clamp is a very necessary instrument, and a great invention, only appreciated by those best acquainted with it. The longer the acquaintance, the more friendly you become. A well-made and large quantity of them should be at hand. From twenty to thirty are few enough to do justice to all cases. Before applying the dam, the clamps should be tried on the tooth until you get one to hold with comfort. If you have only three or four clamps to select from, you fail to accomplish this object, and the result is, your patient has to endure the torture.

In selecting the rubber dam, choose a thin piece, as it is more easily applied, and is more comfortable on the lips and gums.

Then another very interesting and important article is the ligature, and the only proper one to use is waxed floss silk. There is no necessity for half the ligating that is done. Passing the silk around the teeth, and drawing the rubber under the gum, will be all that is necessary in half the cases.

Rinsing out cavities with cold water, and using the cold air blow-pipe, are other torments which can be dispensed with. The preparation of cavities is begun more easily with chisels. Often the small disk cuts out the enamel fissures in a rapid and thorough

manner. Retaining pits can be often avoided, by starting the filling in the old-fashioned manner, with cylinders. Heavy malleting is scarcely necessary.

If the tooth is sore, an automatic mallet with small points will fill it the most easily. The file, for dressing down fillings and separating teeth, is now almost discarded by me. I prefer the ribbon saw. It is fifty per cent. easier to use, and does the work better.

We have progressed in these things quite far enough, to assert that we can perform most operations in a painless manner; but to excavate the sensitive dentine is quite another thing. What is sensitive dentine?

Tomes pulled apart a section of dentine, and said, in so doing, he pulled nerve fibrils out of the tubuli; he may have been mistaken.

Professor J. Taft, a distinguished microscopist, thinks the nerve fibrils discovered by Tomes are only pabulum, and that the seat of sensation is in the lining membrane of the dental tubuli. Others differ on the subject; but it seems to me to be a simple thing to obtund this sensitiveness, whether it be due to nerve fibrils, or only to the lining membrane of the tubuli. Once we overcome this painful difficulty, our practice will be a hundred times pleasanter and easier for ourselves, to say nothing about the extra amount of labor we shall be called upon to do.

Whisky administered in any quantity, I think, helps only to make the patients more sociable. My preceptor uses chloral-hydrate to good advantage. I have seen him operate, after administering a dose to a nervous patient, with comparative comfort, when it would be next to impossible to excavate before giving it. He gives from ten to forty grains, or a grain for every year of the patient's age, up to forty years.

The patient is influenced sufficiently to be operated upon in from twenty to thirty minutes' time.

The "naboli" is composed, or said to be, of glycerine and tannic acid, and is, of course, a fraud upon the dental profession at eight dollars per box.

Arsenic will obtund the sensitive dentine, but it does the work too heroically, and destroys too many pulps. Chloroform is good in some cases, but cannot be used very well when the dam is applied. Ether spray is said to be an excellent remedy. I have not tried it for sensitive dentine. Tincture of aconite has also been recommended as a good thing, used externally or internally.

Now, gentlemen, this subject of painless dentistry must receive more attention than it formerly has. People are anxious about it. It is hard to teach old dogs new tricks. It is hard to change one's mode of operating, after having become accustomed to traveling twenty years or more in the same direction, as it were; but if you wish to increase or retain your practice, I know of no better way of doing it than by following out these general rules which I have alluded to on painless operative dentistry. Trying and persevering in the details of operating is the way to accomplish good results and to advance with the profession. The present mode of applying the coffer-dam has only been perfected after years of perseverance. It has become a regular sleight-of-hand performance.

Only look back a few short years, when it was first introduced, and recall your experiences with it in applying it to simple cases. Then it was, how to get it on to the teeth; next, it was a puzzle how to keep it on; now, it is how to use it with the least annoyance to the patient. Are we advancing? Look in at the door of dental education.

You find here the science is advancing; the general tone of the profession is looking up. Dentistry is a fashionable subject for conversation; at least it seems so to me, as so many people are interested in it. Another dental society has been formed during the past year on the coast. However, that does not look to me to be much evidence of advancement. The metal does not have the right sound.

The intentions of the Pacific Coast Dental Society seemed honorable enough in the beginning; but it seems to me it was a selfishly laid plan to promote a few to good standing, regardless of benefiting the profession. Look at their adopting the Code of Ethics of the American Dental Association. Why, some of the very first officers they have elected have libeled that code of ethics for these many years.

Now that they are under the same regulations that we are, let us hope they may become as good. I have more brotherly feeling for them, and know you all wish the new society prosperity.

The Dental College remains in deadlock. There is a Conkling in the way in the shape of from three to five thousand dollars in coin.

I will be one of fifty who will contribute nothing towards this Cogswell school. There is no use in manufacturing an article

that can be imported at no expense; and San Francisco has imported about sixty dentists during the past eight years. No other city and country in the universe is better supplied in quantity than this, and the average quality is first class, too. We have progressed rapidly in numbers; and although a score of dentists have left us to seek a more profitable field, nearly another score, who had use for assistants and had the cream of the practice, have found their incomes growing gradually less for the past six years. Is it not so?

Do we need a dental college?

Can we compete with the Ohio, the Michigan, the Harvard, and other old-established and respectable schools?

If the standard is high, then count on small classes, seedy clothed professors, and few graduates. Look at the Ohio college. Their graduating class has been small for several years on account of their publishing a list of questions that the graduates had to answer. Those questions were astounding in being so difficult to answer, and instead of increasing the attendance to that school, as was expected, had the opposite effect.

Please bear in mind that all dental students do not attend college for the express purpose of being educated. The parchment—the diploma—has the effect of bringing hundreds of students to the dental college.

If the standard of our college is low, then look for a large class and well-dressed professors. Then look out for quacks. Wisconsin is disgraced by that so-called dental college in Delevan, selling diplomas for twelve dollars and fifty cents apiece, without any attendance.

I had intended to speak of Dr. Sichel's new amalgam and his pyro-phosphate of zinc filling, also his gold made pure; but he is here, and can speak for himself.

I desire to mention the progress which our society is making in a harmonious way. It is charged by some that this Association is conducted for the benefit of a few, that it is run by a ring, and that we have our bosses, so to speak. This may only be imagination.

Those dentists who do not belong to this society and ought to are kept out of it on this account—at least, I believe a good many are. Some think we behave like the monkey and the parrot when the people were at church. At any rate, our number is less than it ought to be. We are quite a mutual admiration society.

I am led to believe, however, that a dentist is thought better of for being a respectable member of this Association, and there is do doubt that any member of the profession in this State can learn something beneficial by attending our meetings. I would have a committee appointed by the next administration to go out among the rusty and selfish though worthy outsiders and invite them in.

For one, I should be willing to offer a premium as a stimulus to their dormant faculties, that we may behold their light. The average respectable outsider feels modest about exposing his ignorance in dentistry to his professional brother. He swims along easily with his patrons, without drowning in professional knowledge; but when he stems the tide with a whole dental association, it requires more courage than many command.

One dentist who never was a member of a dental association said: "What is the use of belonging to a dental association? The proceedings are published, and I read them." He has the satisfaction of getting the milk skimmed, and the use in belonging to dental associations is to get the cream.

We are represented as a whole family; a black sheep in a flock of white ones is conspicuous; hence we should make some efforts to gather some of the numerous backsliders into the fold, and to make some hospitable overtures to the strangers who have come among us. I fear we have become cool. In fact, I know we are cold and selfish, and too often treat our new as well as old brethren not only indifferently but impolitely.

Gentlemen of this Association, we must thaw out. Every lady and gentleman in any society has social duties to perform. We have them as dentists, and we have an immense amount of room for advancement in this direction. It would be becoming in a number of the members of this Association to unbend their stiff joints, and bow a little more gracefully to strangers who settle with us. A little more professional etiquette and politeness—in fact, a good deal more—practiced by all of us would be in good form.

But for progress in our society, I invite your attention to legislation accomplished for the people's benefit. Look at our legislative committees. Observe the strides made by them during the past year. Does our suffering community deserve and require laws to protect it from being disfigured and abused by the uneducated and unprincipled?

We think it does.

Dr. A. Warner. I wrote that paper very hastily. If I should write it again, I would leave out some parts that seem personal.

Dr. Younger. I take one exception to that paper; that is, as to the meaning of the term "Doctor," and the use of it by any one who is not a graduate—that a man has no right to use the term "Doctor" with his name unless he has that right granted him by a college.

Dr. Dennis. I feel I owe the society an apology, for interrupting the reading of the paper; but I knew Dr. Warner would take it good-naturedly, inasmuch as he digressed from his paper, and touched on Dr. Belden's paper. I know that Dr. Belden didn't mean to cast any reflection on us.

Dr. A. Warner. There seems to be a great amount of ignorance about the term "Doctor." You would be surprised, if you should go out on the street, or to a school, and ask different people for a definition of the term. I do not believe more than one out of ten can give you a correct definition of it. Last evening I asked several parties what "Doctor" meant. Why certainly they said they all knew the term "Doctor" meant a physician, a man dispensing medicine and administering it; but when we got out of the routine, all three I asked gave it up. It does not follow, because a man is a graduate of law, or medicine, or dentistry, he is a doctor. I do not think he is, according to Webster.

Dr. Robinson. With regard to the painless part of the dentistry mentioned in the essay, I was very much interested in it. Speaking of wedging teeth apart with cotton: I did not catch the idea. How long is it going to take? I would like to know how much time Dr. Warner takes.

Dr. A. Warner. Ten to twenty hours.

Dr. Robinson. Will there be any inflammation, as in the old method?

Dr. A. Warner. Not in the least. I will state that twenty-four hours is long enough for any case. Perhaps the cotton may get shoved up to the gums. I do not do that. I have worked a great deal in that direction, and I think it depends on properly locating the cotton.

Dr. Dutch. I would like to ask Dr. Warner whether he applies it more than once in that twenty-four hours.

Dr. A. Warner. No, sir.

Dr. Rabe. Have you ever tried this new wood, to compare the effects? How long will it take to do the same work?

Dr. Pearson. Ten to twelve hours.

Dr. Rabe. That is something I never saw; but would like to see it.

Dr. Pearson. It is an East India wood. It has no fiber; and by pressing it with the fingers, you can apply it in the same way as cotton.

Dr. A. Warner. I want to say one thing. I didn't mention about keeping the cavities dry. I thought that was well known, that that is one of the greatest troubles we have, when our patients are complaining about the rubber dam.

Dr. Dutch. That is contrary to the view expressed this afternoon. The gentleman says he used water.

Dr. A. Warner. I don't think you understand Dr. Knowles's idea. He claimed by using water when running rapidly he kept the burr cool.

I don't want to intrude on the time of this Association; but I do not think that any time can be as well spent as in talking on this subject of painless dentistry. I have had it come home to me so often. When I was in New York, four years ago, I was invited to a clinic of the First District Dental Society of New York. Dr. Atkinson operated at the clinic. I should say the great Dr. Atkinson. I say great, because he is a great man. In this clinic he filled the tooth of a dentist forty-five years old—the left central incisor. The right central incisor was all right, the left lateral was gone; but the tooth he was working on had been dead for some time. He applied the rubber dam, ligating each tooth. He paid me the compliment of asking me several questions, inasmuch as I was a stranger, coming all the way from California. He was working right around these central incisors, and drawing his ligature up under the gum. He then turned to me, and asked what kind of a knot would I tie; and I said: "Professor, why do you tie it at all?" He replied, "That is a very sensible question to ask." I felt very cheap; but come to think of it, it was a sensible question. If I had been operating, I would not have tied it at all. I should not have used the thread in the first place, or tied it. He wedged the centrals apart with a flat wedge, and drove it up against the gum. Now, I do not speak of that disrespectfully; I speak of it simply as an example. I believe I could have filled the tooth without hurting him in the least, and I think any member of this Association could. This is one case amongst many. I have seen several others.

Dr. Dutch. I would like to ask Dr. Warner what he claims for painless dentistry; if he don't know that every man practicing dentistry does what he can to avoid inflicting pain. I know I won't hurt a person at all if I can help it; my language may be strong, but I prefer to do my work right.

Dr. A. Warner. Since you ask that direct question: I positively know of dentists who do not care whether they hurt their patients or not. I think by using care with all of our instruments—that is the main thing—we can avoid pain in a great measure.

The Plain Record of the New Departure.

BY PROF. J. FOSTER FLAGG.

After more than three years of determined effort at plain speaking and careful writing, there is still to be found an occasional individual who believes that the champions of the New Departure were unguarded enough to enunciate that "in proportion as the teeth need filling, gold is the worst material to use"; but it is happily now understood by a large majority of the members of our profession that such a statement never was made, and that every New Departurist would regard such as the farthest possible from truth.

It is also true, that as yet an occasional sneer is heard in reference to the enunciation that "a filling may be the best known for the tooth, and yet leak badly"; but it has been so repeatedly demonstrated that gutta-percha makes, at best, a very leaky filling, and yet that in certain places in kinds of teeth it has proven itself to be the very best and most durable tooth conserver which we possess, that even this sneer is now regarded by the majority as indicative of ignorance rather than erudition.

Even with these marked modifications of opinions, it is, however, a far too prevalent idea that the New Departure practice is either exclusively devoted to the use of the various plastic filling materials; or, at best, that it assigns to gold a very low position, and regards it with feelings nearly allied to contempt.

So far from this being true, it is everywhere plainly recorded that it is the *abuse* of gold which is antagonized by the advocates of the New Departure, and equally plainly recorded that they recognize to the very fullest extent the admirable, the undeniable, the incomparable capabilities of this most excellent filling material.

I have always taught that, "for accessible cavities in teeth above medium in structure, gold is the king of all filling materials." This I have enunciated from the lecture stand, and acted upon in my clinics year after year for twenty years.

And is it reasonable, or would it be consistent, that I should condemn it or advocate its abandonment? I should say not.

Let us look at the record. It is by this that the future of dentistry will judge the workers of the New Departure, and it is by this that it will also judge the doings of our adversaries. I shall show you, gentlemen, how sincerely, how truthfully, and with what care for the merits of gold, the work for the New Departure has been prosecuted, and you will then see how reckless have been the misconceptions and the broadly spread misrepresentations of our antagonists.

It has been thought to weaken our attack, by declaring the well-known fact that gold filling will last frequently for twenty or even thirty years.

What is the admission of the first enunciation of the New Departure? In the speech which I had the honor of making, in behalf of my co-laborers, before the "New York Odontological Society," November, 1877, it is written—

"I do not wish to say anything to you of the teeth which you are in the habit of filling successfully, and, as we express it, satisfactorially, with gold: teeth of dense structure, whose cavities have walls so strong that you can impact a filling which lasts a lifetime." Is this denying capability to gold? Does this stop even at twenty or thirty years? It says "*a lifetime.*" It means *forty*, FIFTY, SIXTY years, if you will. It means that the advocates of the New Departure knew full well the possibilities of the proper use of gold, and desired to give it its full meed of praise. It means that our work was too broad to permit of unjust detractions, and broad enough to admit of all just concessions.

It was but a few months, before the opposition reported me as having said, on the above-mentioned occasion, that "gold as a filling material for teeth was entirely discarded"; following up this unwarranted misrepresentation by the assertion that "this New Departure has advocates in various parts," and mentioning Dr. Palmer of Syracuse, New York, as one.

Note Dr. Palmer's reply in the "Dental Cosmos," August, 1878, page 427: "The reader can well imagine the wrong that would be done to the New Departure and its advocates were the

statements believed that the use of gold is discarded or condemned where it can be successfully used.

"The principles advocated by the New Departure, as I understand them, concede the use of gold as a filling material wherever and whenever it can be used for the preservation of teeth as successfully as other materials. The New Departure begins where gold leaves off."

In the "Cosmos" for September, 1878, is a paper which I read before the American Dental Association at Niagara Falls, and which advocated exclusive use of plastic filling materials in a practice which I explicitly stated was composed "to the full" of very soft teeth, you will find it again squarely stated to the assembled representative men as follows:

"But while I advocate thus strongly the use of plastic filling materials, and while I state to you that I have completely abandoned gold, I wish you distinctly to understand that this practice is not now and never has been advocated by the New Departure.

"In the presentation of our desires, it is expressly stated just what kinds of teeth should be filled with gold, and just what kinds of teeth should be filled with plastics."

In the "Cosmos" for March, 1879, page 132, Dr. Palmer, in writing on "The Science of Filling Teeth," says:

"Because of the assertion that the doctrine advocated by me abrogates the use of gold, I will again repeat that this never was a New Departure claim."

When the advocates of the New Departure concluded that they were prepared for the attack, and although it was at once defiantly announced that they "had not prepared for only a small struggle," but were ready for the fight, had "plenty of shot in the locker," and were about to open their batteries in earnest "against the accepted dentistry of the day," it was nevertheless thought that the whole thing would soon be easily stifled, and that would pass into dental history as a vagary, alike whimsical and impotent.

These anticipations were, however, not realized. The schism grew apace; its adherents increased in number; many excellent men spoke openly in favor of its doctrines; and a vastly greater number leaned gracefully toward the practicability of its teachings.

At last, after nearly a year had elapsed, one systematic reply was made in the vain attempt to stay the tide.

In the ninth section of this series of arguments it was again asserted that "the abandonment of gold means the forsaking of the metal which has made the American dentist what he is."

Again, for the *fifth* time, it was replied—"Cosmos," June, 1879, page 316:

"The New Departure nowhere teaches the abandonment of gold; on the contrary, it knows just where gold can be satisfactorily used quite as well as does the essayist. Every one of its strongest advocates has had quite as extended opportunity for observation in this direction as the essayist has had. We think that we have each given much more sufficient evidence of our capability of judging of this matter than has the essayist of his capability of judging of the merits of the "basal principles" of the New Departure; but we would have *mind* as well as *metal* have something to do with the making of American dentists, that thus we might have gold *used* instead of *abused;* that we may have its power for usefulness defined; that we may see it exemplifying its utility whenever we see it, instead of so very, very frequently only exemplifying the wretched combination of defective manipulation and incompatibility of material with tooth-bone."

Now, my fellow-members, I ask you, can anything be more definite or decisive than the stand which the New Departure has taken from the first, and maintained till the last, in regard not only to the non-abandonment of gold, but as to its high and proper appreciation of the eminently valuable characteristics which gold possesses as a filling material? And again, I ask you to reflect upon the question, How long is it possible that it could have been otherwise? It was not the aim of the New Departure to decry a metal; but it was its object to antagonize its idolatrous worship, and to restrain its abuse. It was the aim of the leaders in this movement to so direct the observation of the thinking men of dentistry as that they should see the folly of giving pre-eminence to any one material, by ranking it invidiously as "the best." It was not intended that the crusade of the New Departure should have for its work the petty and ignoble task of gold damnation; but that it should sweep, as it has swept, rampant with the power of its great and glorious mission—"tooth salvation." This was its war-cry in its first onslaught. It is by the fairness of its propositions and by the truths of its teachings that it has increased the number of its followers. Its advocates are earnest and sincere;

its arguments have not been met, much less refuted, by its opponents the results which its methods prove to be easily accomplished are recognized, by those who have examined them, as eminently satisfactory.

The New Departure has worked for the saving of teeth. This is its only end and object. Under this banner it has thus far marched triumphantly, and under this banner it means to conquer.

Inter-dental and Sub-mental Splints.

BY W. F. GRISWOLD.

After looking over the field, and finding the subject of inter-dental splints practically exhausted, I have concluded (with the permission of your honorable now ex-president) to change my subject somewhat, and confine myself to the construction, application, and advantages of inter-dental and sub-mental splints, as applied in the treatment of fracture or fractures of the inferior maxilla. By so doing, I hope to make it more interesting, and at the same time more practical.

As every dentist is liable to be called upon to make and adjust dental splints for the treatment of fractures of the inferior maxilla, I will try and be as explicit as possible, hoping thereby to enable any dentist to proceed at once with the case in hand.

I have thought best to take a case in practice which would be applicable to all similar cases, and endeavor to show you, step by step, the manipulations, from the taking of an impression of the parts to the final adjustment of the splints.

I have with me some casts, splints, and clamps which I will use in demonstrating, so that none may fail to understand me. You will find my manipulations similar in many respects to those laid down by modern authors, but in some respects differing, in that they are simplified, and at the same time certain of producing the desired results; while having, as I claim, some advantages over any and all other plans that have come under my observation.

Some years ago I was called upon to treat a case which had been given up by the surgeons having it in charge; and as I had never treated a case of the kind, and having no authors at hand, was thrown entirely upon my own resources, it was with great reluctance that I concluded to take the case in charge; but as the patient was in a deplorable condition, and very solicitous, I con-

cluded to do the best I could, and accordingly set myself to mature a plan that I thought would be successful.

After I had matured my plan, I submitted the same to the patient, and he, being an intelligent man, saw at once that there was every reason to suppose that it would be a success; so certain was he, that his countenance immediately lighted up, and he was ready to exclaim, "Eureka!"

When my splints were finally finished and adjusted, and he was able to articulate for the first time since the accident, which was a period of eight days, you can well imagine his great joy.

After I have given you a brief description of the case, I will proceed to give you in detail my plan. The case was a compound comminuted fracture, the fracture occurring at the symphysis and between the first and second bicuspids, the intervening part containing the four teeth being fractured just below the alveolar process, and entirely severed from the rest of the jaw. There was a wound in the check two and one-half inches in length, extending entirely through it.

I did not see the case until the sixth day after the accident, and as the wound in the check had not healed, you can well imagine the condition in which I found my patient. My plan was—

1st. To obtain an impression of the teeth of the fractured jaw, without putting the parts in apposition. The impression was obtained with comparatively little difficulty, although the parts were much swollen.

2nd. I took an impression of the teeth of the superior maxilla, and then made plaster casts from these impressions.

3rd. I placed the plaster cast of the superior auxillary in an articulator.

4th. I then divided the cast of the fractured jaw at the points indicated by the fractures, placed them in the articulator, and brought them up so that they would articulate with the teeth of the upper jaw. I then fastened them in that position, first with wax; after I was sure the articulation was correct, with plaster. I now removed the cast of the fractured jaw from the articulator, and made a vulcanized rubber plate or splint, to cover the body of the teeth. Now, it is plain to be seen that when the plate is placed in the mouth over the teeth of the fractured jaw, that it must of necessity bring the parts into apposition. Apertures were made in the splint so that I could observe the position of

the teeth, and for the purpose of cleansing the parts underneath it.

5th. I then took an impression of the face under the chin, from which I made a gutta-percha splint having projections on either side, through each of which I made apertures just large enough to admit of the passage of No. 13 wire.

6th. I then made two clamps of silver wire, having thumb-screws on one end of each, and shaped them so that they would rest on the inter-dental splint, pass out at the corners of the mouth, and through the brackets of the sub-mental splint. After I had everything in readiness, the jaw was set, which was done by the patient himself. He took the plate, placed it in his mouth, arranged the fractured parts, and as each tooth had its own place in the plate, found no difficulty in getting the parts into position. After the sub-mental splint had been fastened around the patient's neck, by means of straps attached to it, the parts were held firmly and securely in position by means of the clamps.

The advantages resulting from the above method of setting a fractured jaw are—

1st. The operation is painless.

2nd. The patient has freedom of the jaw, and suffers very little inconvenience in eating, drinking, and speaking.

3rd. A perfect articulation of the teeth and arrangement of the parts are secured with unerring certainty.

4th. By means of the thumb-screws the clamps can be adjusted at will as the swelling increases or diminishes, or can be removed altogether with the sub-mental splint, thus enabling the patient to cleanse the parts, at the same time leaving the inter-dental splint *in situ*.

Dr. Younger. It is the simplest and best appliance I have ever seen. I had one case of a double fracture in 1875. I cannot think what splint I used, but I believe I have some record of it in my books.

Resection of the Right Inferior Dental Nerve.

BY WM. J. YOUNGER, M.D.

I beg leave to present to your attention a report of a case of resection of the right inferior dental nerve, performed in this city by Dr. C. Max Richter, physician to the German hospital. It is

an operation that has seldom been performed—I think never before on this coast. Having had the good fortune to be present, I was struck not only with the simplicity and feasibility, but the entire success in the rusult for which the operation was undertaken. As you are well aware, there are different methods of performing this operation, all of which aim to reach the nerve before its entrance into the canal. One is to expose the nerve by making an incision through the cheek and applying a trephine. Another is the one lately performed by Professor Lucome, of Strasbourg, who resected the nerve by working to the orifice of the canal, through an incision made at the angle of the inferior maxilla, between the masseter and the internal pterygoid muscles. But these methods should be rejected, in favor of the more simple one recommended by Paravacini in the "Annali di Medicina Milano" in 1858, a great recommendation to which is, that no scar is involved to disfigure the face. As this is the operation I witnessed, I will describe it in his words: "The mouth being held wide open, and the commissure of the lips drawn backwards and outwards, an incision extending from the last upper to the last lower molar tooth is made, one-third of an inch on the inner side of the sharp anterior border of the coronoid process, and carried through the mucous membrane to the tendon of the temporal muscle. The surgeon passes the finger into the incision, and along the inner surface of the bone, between it and the external pterygoid muscle, until he touches the bony point which marks the orifice of the canal. Passing a blunt hook along the finger, he raises the nerve upon it, isolating it from the accompanying artery, and divides it, or cuts out a piece of the nerve." Although this operation was recommended in 1858, it was not performed until 1871, when Menzel in Trieste and Meusel in Gotha published an account of two successful operations. Since then, Billroth, in Vienna, and two other surgeons in the same city, operated, each once; and in 1876, Lossen, in Heidelberg, operated successfully after the same plan. These six cases are the only ones known in the literature of this operation so far; though one of the cases died, it was not in consequence of the peculiarity of the method. In April of this year Mr. Maw of Eureka, Nevada, presented himself to Dr. C. M. Richter. He had been suffering most intensely for over ten years from acute neuralgia of the right inferior dental nerve. All the teeth on the affected side had been long ago extracted, in the hope of relief. Every drug recommended for neuralgia had also been tried in vain. Some

years ago the constant current had been applied to the nerve for weeks, but without accomplishing any thing more than momentary relief. During the winter a stroke of paralysis was added to the sufferings of the unfortunate patient, who was only forty-two years of age and seemed otherwise a picture of health. He insisted upon having the nerve, the source of all his distress, cut out, and on May 3rd, 1881, the operation of Paravacini was successfully performed by Dr. Richter. On account of his apoplectic tendency (having but recently had a stroke), no anæsthetic was administered. Resting in an arm-chair, he stood the operation, which lasted about fifteen minutes, like a hero. The nerve was readily found, raised upon a blunt hook, so that it could be seen, and then divided with scissors. But it was found impossible to cut out a piece of it, as the nerve instantly retracted beyond the reach of the instrument. Some bleeding ensued from cutting the dental artery, but it was stopped by a hypodermic injection of ergot. No indication of fever or inflammation followed the operation, and even the symptoms of paralysis improved so that he could walk better and use his arm more freely. There was a perfect union of the wound in nine days, and on May 15th, ten days after the operation, he was pronounced cured. The neuralgic pain has not since recurred, and Mr. Maw is happy.

Dr. Dennis. I would like to ask Dr. Younger if he is not of the opinion that this difficulty will return? If this produced a radical cure?

Dr. Younger. I think not; for the retraction of the ends was too great to admit of a union in any form. The space left was fully an inch.

Dr. Dennis. In 1873 I called on a surgeon in New York who married into a family in my native town; I went to see his wife, and he showed me the operation. He described the operation he had performed three different times for this same trouble, and it returned every time; it was only a temporary relief.

Dr. Birge. I recollect of seeing the account of similar operations, and often the pain returned after a while in the same way. If you cut off a lower limb the patient will feel pain in his feet still.*

* At the date of publication the pain had not returned, and the operation, consequently must be considered a success.

The Future Status of Dentistry in California.

BY H. C. DAVIS, L.D.S.

In the contributions to dental literature of the present day, it is instructive as well as perplexing to note the different opinions expressed by some of the most distinguished men in the profession concerning the present status of dentistry. I will not weary you by rehashing the old story of how dentistry has sprung up within the last forty years, from being more or less a mechanical *trade*, till it has now achieved an equal rank in the learned professions, so that its progress may be looked upon as one of the grand triumphs of this glorious nineteenth century, or enter upon a long dissertation as to whether it is a specialty of medicine or not. As the matter stands at present, a medical college certainly does not include in its curriculum a practical teaching of the dental art, nor does the dental college prepare its students for the practice of medicine. To all thinking minds, however, the union of the two will be the grand *desideratum*, so that in speaking of the future *status* of dentistry we can safely say that it will become a specialty of medicine.

As regards this State, we find our profession is as ably represented as are the older ones, so that we may assert without egotism that there is not a city in the United States, in proportion to its size, that can make a better showing as regards the *personnel* and attainments of its dental practitioners than does the city of San Francisco: which is not owing, however, to any legislative provisions or enactments, but merely a matter of good fortune in attracting able men to our coast, so that we have now at command the material to build up a glorious future for our State as regards our art.

The future of any one thing must necessarily always be more or less a matter of conjecture, but the energy, perseverance, and knowledge that has been and is being displayed in the furtherance of the science of dentistry will never rest till it has placed the dental art on a broad, liberal, and solid foundation, that will command the respect and admiration of the world, and established for it a position and standing that will last for all time; and it behooves us in California to do our full share in the furtherance of this object, to do which we must sink personal considerations, and work in harmony and accord, for it is "in union that there is

strength." The first thing to do is to secure legislative protection, and if a bill is drafted that will not interfere with the rights of any member of the profession now in this State, there will be no trouble in getting it through the legislature, and the future on that point will be assured. Give every man who is engaged in the practice of dentistry in this State, at the time of the passage of the act, a license to practice, not taking the matter of qualification into consideration, you will, by so doing, enlist every member as a co-worker, and appeal to their self-interest—the strongest of all interests.

The next steps to be taken is to establish a dental college, and make it, from the first, second to none in the country; and as I said in a former paper, I trust for many years to come it will be the only institution of the kind in our State, so that we can give to it our united support, and make it worthy of us and the Pacific coast. We have only to look at our medical colleges and see how few of them are properly endowed. Their name is legion, the majority of which have to literally scratch for a bare subsistence; no preparatory training is required. Whether the matriculate spells his name correctly or not, is not of as much moment as the pecuniary consideration involved; therefore one cannot wonder that European schools refuse them recognition, with three or four exceptions. In Europe they are more thorough in these matters. Great Britain, with a population of some thirty-five millions of people, has only four medical schools; their graduates are all college men; and their medical course twice as long as ours.

I do not go to the extent that an A. M. should precede the M. D., but certainly a university entrance examination should be required before matriculation. This applies to dentistry, for the future dentist will take his M. D. before the D. D. S., by legislative act; therefore, let us make a college worthy of us, and for the first few years of its existence put our hands in our pockets and give it material as well as moral support, and not compel it to lower its tone or dignity at the outset.

Give our young men, so soon to come after us, something to be proud of; let us be benefited by the experience of others. Many of us have amongst our patients some wealthy men, who, if solicited, and the matter put in its proper light, would, I have no doubt, contribute a liberal sum, in the aggregate, to start our college.

I feel satisfied that, if we put our shoulders to the wheel and

work together, there will be not the slightest trouble financially; and as for my personal feeling regarding professorships, I admire the unselfishness of the men who are willing to undertake the duty with its many responsibilities, and the loss financially, that others may gain. It is fortunate that we have good men who are willing to undertake it.

There is one thing I hope will be inserted in the legislative enactment, and that is, that after its passage all students must take the college course, and settle at the outset the question of private preceptorship.

As that is something which very much affects our future, as each State is a sovereign State in its local administrations, let us so frame our enactment that the highest condition of professional and intellectual culture will be attained. In England they have already bridged the chasm. May we soon do likewise; and with our better manipulative skill elevate the *status* of dentistry in California to that eminence and distinction in the scientific world that its character and distinguished worth deserves.

The President appointed the following standing committees and essayists for the ensuing year:

STANDING COMMITTEES.

Pathology and Surgery.—W. A. Knowles, Brewer, H. C. Davis.

Therapeutics.—Goddard, Holmes, Ralls.

Chemistry.—Asay, Robinson, Jenkins.

Histology and Microscopy.—Dennis, McLain, Pierson.

Operative Dentistry.—Younger, Lundborg, Harding.

Mechanical Dentistry.—Kingsbury, Rabe, Odermatt.

Literature and Education.—C. C. Knowles, Cornwall, Bishop.

Ethics.—Dutch, Brewer, Birge, Cornwall, Kingsbury.

Publication.—S. E. Knowles, *ex officio*, Goe, *ex officio*, McLain, Knox, Goddard.

Executive.—S. E. Knowles, *ex officio*, Goe, *ex officio*, Dutch, Younger, Sichel.

SPECIAL COMMITTEES.

College.—Dutch, Younger, Cutlar, Plomteaux, Lundborg, Goddard, Kingsbury, Dennis, McLain, S. E. Knowles.

THESES.

Dental Etiology.—J. J. Birge.
Associational Ethics.—S. E. Goe.
Operative Dentistry.—H. R. Morton.
Restoration vs. Extraction.—G. W. Luce.
Diagnosis.—R. Cutlar.

The minutes of the afternoon session were read and approved, and the Association adjourned, to meet on the first Tuesday in June, 1882, at 10 A. M.

S. E. GOE, *Secretary.*

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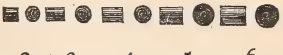

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